





Investigating Entry-Level Software Project Managers' Skills and Responsibilities: An Empirical Analysis of LinkedIn Job Ads

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Abstract: **Context.** Project managers play a central role in software development projects. Knowing the skills required and responsibilities expected from entry-level software project managers can help those starting a job search and organizations that want to articulate their staffing needs clearly. **Aims.** To investigate the required skills and expected responsibilities prevalent in the job market for entry-level software project managers. **Method.** This work collects and analyzes, qualitatively and quantitatively, 50 online job advertisements from the LinkedIn Jobs platform. **Results.** Overall, organizations look for professionals with a vast list of skills and able to address several job responsibilities. The most expected responsibilities are *planning, organizing, and coordinating team activities, establish a good communication with the client, and analyze and communicate project risks*. The most required skills are *communication, technical knowledge, and planning/managing*. Both hard and soft skills are expected. However, soft skills are slightly prevalent. **Conclusion.** Job ads are a valuable source to gain insights into current job market trends and project management role expectations for professionals, organizations, and researchers.

1 INTRODUCTION


Software project management seeks on-time delivery of a project and manages its internal unknowns and complexities (Shafiq et al., 2018). Project managers play a central role in ensuring the successful delivery of projects. They are responsible for the application of knowledge, skills, tools, and techniques to project activities to meet project requirements (Institute, 2021). Their role is one of the most challenging because it requires a broad understanding of several areas that must be coordinated and requires strong technical and non-technical skills (Guide, 2001).


Several studies have investigated skills and responsibilities for project managers (Ahsan et al., 2013; do Vale et al., 2018; Hernandez-de Menendez et al., 2020; Hefley and Bottion, 2021). Skills highlight the specific abilities, competencies, and qualifications a company seeks. The responsibilities out-


line the specific tasks and obligations expected from the candidate for a particular role. Ahsan et al. (Ahsan et al., 2013) showed that the most commonly demanded skills are leadership, effective communication, technical expertise, team building and management, and planning. Do Vale et al. (do Vale et al., 2018) identified four categories (contextual, managerial, technical and behavioral) to organize project managers' skills. Hernandez et al. (Hernandez-de Menendez et al., 2020) explored the impact of Industry 4.0 on project management, emphasizing the need for project managers to acquire new technical, contextual, and behavioral competencies. Lastly, Hefley and Bottion (Hefley and Bottion, 2021) investigated the readiness and performance of new graduates in project management roles.


Although these studies have identified responsibilities and skills needed for software project managers, it is still necessary to know what responsibilities and skills are required by the job market for **entry-level software project managers**.

Investigating requirements for entry-level project manager positions can provide insights for guiding individuals in preparing themselves for starting a ca-

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reer in project management. Information on the required skills and expected responsibilities helps them make informed decisions on preparing and qualifying for job search processes. This information would also be valuable for educators, who could best fit their courses guided by demands from the software industry. For instance, should a future project manager invest several hours learning a specific technique for cost estimation or improving her(is) communication skills? Or, instead of focusing only on technical skills, which soft skills should be considered in project management courses?

On the other hand, the hiring of project managers is a significant challenge for organizations (Ahsan et al., 2013). Mapping the skills and responsibilities for entry-level positions is helpful for organizations looking for such professionals. Organizations can clearly articulate their expectations when hiring them by identifying the core skills and responsibilities associated with entry-level project managers. They can also align their recruitment strategies, job descriptions, and selection processes to ensure that the candidates attracted possess the desired qualifications.

This paper **investigates the required skills and expected responsibilities prevalent in the job market for entry-level software project management positions**. Our research is based on the analyses of online job advertisements on the professional networking platform LinkedIn. The study design is inspired by the work of Maya et al. (Daneva et al., 2017) and considers a diverse range of job advertisements from LinkedIn to collect six elements present on the job ads: company name, company size, company specialties, the responsibilities, and the skills required.

The results show that *project manager* is the most used title for entry-level project manager job ads. Only two ads indicated the required level of experience in the title, requiring the candidate to verify the job description. The most commonly expected responsibilities are *plan, organize and coordinate the team activities, establish good communication with the client, and analyze and communicate project risks*. The most commonly desired skills are *communication, technical skills and planning/management skills*. The list of the most commonly mentioned responsibilities and skills, somehow, confirms how project management body of knowledge (Institute, 2021) defines a project manager.

In addition to this introduction, this paper has six other sections. Section 2 presents related work. Section 3 describes the methodology used. Then, Section 4 presents the results, which are discussed in Section 5. Section 6 discusses the threats to validity. Finally, Section 7 presents the final remarks.

2 RELATED WORK

There is a couple of studies investigating skills and responsibilities of specific software development roles. Concerning software project managers, Hefley and Bottion (Hefley and Bottion, 2021) examined the readiness and performance of recent graduates in project management positions. The authors discovered that these new graduates often lack the necessary preparation and comprehensive project management skills, particularly in risk management, and their soft skills are not well-developed, which presents challenges for project success. Hernandez et al. (Hernandez-de Menendez et al., 2020) investigated the implications of Industry 4.0 on project management, underscoring the necessity for project managers to gain fresh technical, contextual, and behavioral skills. The study ultimately established that project managers in the context of Industry 4.0 should place greater emphasis on behavioral or soft skills compared to their traditional counterparts, mirroring the evolving demands of this technological revolution.

Magano et al. (Magano et al., 2020) examined the project management competencies and traits associated with Generation Z individuals entering the workforce. The study identified a lack of self-awareness among Gen Zers about their traits but also highlights a significant correlation between some of their characteristics and essential project management soft skills, suggesting that Generation Z has promise in the project management field. The authors emphasized the need for further research to improve educational approaches and training policies to strengthen Generation Z's soft skills and assess whether their traits align with the competencies sought by organizations in project management.

Brewer (Brewer, 2005) discussed the skills a project manager must have to be proficient and how these skills can be tough. The author related the software project manager's competence to their skills. For example, the skills written and oral communication, effective listening, strategic planning, conflict management, teamwork, business writing are expected to the competence "to facilitate effective communication between customer, management, project sponsors, and the project team." Jalil and Shahid (Jalil and Shahid, 2008) conducted a survey about the skill set of software project managers, revealing that the highly desired skills of software project managers are communication, organizational, and leadership skills. Ahsan et al. (Ahsan et al., 2013) analyzed project manager job advertisements, identifying required knowledge, skills, and abilities. Their findings reveal variations in the emphasis on soft skills

and highlight the implications for project manager recruitment.

In another related work, Peters and Moreno (Peters and Moreno, 2015) presented a set of skills that should be taught to software engineering students who intend to work as project managers. These competencies include team development, communication, project planning and scheduling, complexity management, strategic planning, estimating, project cost accounting and status monitoring, and risk management. Do Vale et al. (do Vale et al., 2018) classified project manager competencies into four categories (behavioral, technical/specific, management, and contextual), and reported core competences such as leadership, planning, and business. Gandomani et al. (Gandomani et al., 2020) performed a systematic literature review to identify the role of project managers in agile software teams. The authors found eleven responsibilities and duties of the agile project management, such as change coach and organizing affairs. Also, they found a difference between agile and traditional project management, pointing out that agile project management is accompanied by direct intervention in the development process.

Differently, our work focuses on responsibilities and skills expected for entry-level project managers from LinkedIn ads.

3 RESEARCH METHOD

This section presents our research questions, the data collection and analysis procedures.

3.1 Research Questions

Software professionals face several challenges to enter in the job market. Common questions asked by them are: How to look for a specific job position? What skills should I improve to have better chances of getting a position? What responsibilities should I be prepared for dealing with in a specific position? On the other hand, when organizations are hiring, they have to stand out in the right way to the right job seekers to connect with the people who will help them reach their goals. A key step is putting their job listing containing the correct information.

The goal of this study is to investigate online job advertisements for entry-level software project manager. We consider the following research questions:

- **RQ1: What terms are used for entry-level software project manager positions?** This question aims to identify terms used by organizations when hiring entry-level project managers. This may

help job seekers understand the different job titles and better target their job search. Also, it may enable employers to create more accurate and appealing job postings.

- **RQ2: What responsibilities are accounted for entry-level software project managers?** We seek to establish a comprehensive list of responsibilities associated with entry-level project manager roles. It helps potential candidates to have a clear understanding of the tasks they might be expected to perform in such positions and allows employers to outline the core responsibilities when advertising jobs.
- **RQ3: What skills are necessary for entry-level software project managers?** This question focuses on identifying skills required for entry-level project manager roles. It helps job seekers to assess their qualifications and adjust their skill set to meet the industry's demands. For employers, understanding the central skills aids in evaluating and selecting suitable candidates who possess the necessary competencies.

3.2 Data Collection

We collected the data from job advertisements from LinkedIn jobs repository. The data was collected twice, with a 30-day gap between each round. The following filters were applied on LinkedIn search:

- **Location:** United States. The position is required to be located within the United States due to its influential position in the software industry, offering abundant data and resources.
- **Experience Level:** Entry Level. The position must be open to junior project managers. Senior and expert level positions will be excluded, primarily based on the presence of "senior" or "expert" terms within the job title or if the job description clearly specifies a requirement for candidates with extensive experience, such as a minimum of five years of professional work experience or expertise in the field. The assessment of a position's suitability will not be based on the complexity of the listed job responsibilities.
- **Job Type:** Full Time. We are interested only in job ads that require the position to be either permanent or possess the potential for permanency. All internships, traineeships, and positions located abroad were disregarded and deemed ineligible for consideration.
- **Industry:** Software Development. Job postings outside the scope of software development were excluded.

- **Job Function:** Project Management. Job advertisements seeking professionals not associated with project management roles (e.g., scrum master), will be also eliminated from the final data set.

To perform the search on LinkedIn, first, navigate to LinkedIn's website and log in to your account. Once logged in, click on the "Jobs" section. In the search bar, type "project manager" and then specify the location as "United States." After performing the initial search, you will see job listings related to project management roles in the United States. To refine your search, click on "All Filters." In the filter options, select "Entry level," "Full-time," and specify your interest in "Software Development." Finally, click the "Search" button to see a tailored list of entry-level, full-time software project management job opportunities in the United States.

We collected for each job ad: job title, company name, company size, company speciality, responsibilities, skills, and if the job ad was for an agile or non-agile position. Due to the absence of a prescribed template, job ads varied in style. Figure 1 exemplifies a job ad and how we identify the data to be collected.

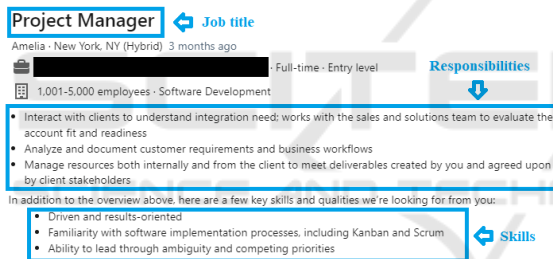


Figure 1: Example of a job ad.

3.3 Data Analysis

We followed qualitative data analysis procedures to answer our research questions (Strauss and Corbin, 1998; Seaman, 1999). For RQ1, we analyzed the job titles and grouped them into high level terms. For example, job titles like "project manager," "project manager - consultant," and "project manager - software development" composed the high-level term *project manager*. This process was performed by the first author and reviewed by the last author.

For RQ2 and RQ3, we applied qualitative data analysis techniques (Seaman, 1999). We applied manual open coding to the collected list of responsibilities and skills. Initially, the first author coded the set of all answers. After, the second author reviewed all codes. Disagreements were resolved by the last author. Next, we analyzed the extracted codes in both subsets (responsibilities and skills), identify-

ing the codes that had the same meaning. This process resulted in the final list of responsibilities and skills.

An example of this process is as follows: a job ad mentioned "handle risk management and contingency planning" and another described "highlight risks and assumptions throughout the project." For both of them, we extracted the code "analyze and communicate project risks." The used nomenclature emerged inductively from the job advertisements.

Subsequently, we **categorized the identified skills into two types: hard and soft skills**. Hard skills refer to a person's ability to perform a certain type of task or activity (Hendarman and Tjakraatmadja, 2012). On the other hand, soft skills are personal attributes that enhance an individual's interactions and his/her job performance (Hendarman and Tjakraatmadja, 2012). For instance, we classified "excellent verbal and written communication, organization, and follow-up skills" as a soft skill and "PM framework/software" as a hard skill.

This final step was conducted by the first author and reviewed by the last author. Divergences were resolved by them in a meeting. In the end, we have a list of skills and responsibilities, and the types of each skill. We counted the number of times each of those elements was mentioned on job ads and ranked them.

4 RESULTS

In total, we collected 85 job ads, but 35 of them were duplicates. We eliminated the duplicates, resulting in 50 job ads composing our final data set. The raw data is available at here.

These ads were posted by 38 North American organizations. Most of them are medium-sized (46%, companies with 51 to 1000 employees), followed by large (42%, more than 1001 employees), and small (12%, up to 50 employees). From this total, 38% were interested in agile software development process.

4.1 RQ1: What Terms Are Used for Entry-Level Software Project Manager Positions?

We found 30 terms in job titles and grouped them into five main high-level terms: *project manager* (38 citations), *program manager* (9), *technical project implementation specialist* (1), *technical data migration consultant* (1), and *public key infrastructure administrator* (1). The term *project manager* was the most mentioned and is composed of the following terms: "project manager," "project manager - consultant,"

“project manager - software development,” and “junior project manager.” Interestingly, only two ads indicated in the title the required level of experience, requiring the candidate to verify the job description.

4.2 RQ2: What Responsibilities Are Accounted for Entry-Level Software Project Managers?

We found 27 responsibilities for entry-level project manager positions. Table 1 presents the ten most commonly cited. This table reports the responsibility name, its definition, quotes, and the total number (i.e., count) of citations (#CR), i.e., the number of job advertisements in which the responsibility was found. The column %CR presents the percentage of #CR about the total job advertisements (44) that cited at least one responsibility. It reveals how frequently each responsibility was cited. The complete list is available at here.

Project managers are most tasked with *planning, organizing, and coordinating team activities*, with 82% of the job advertisements, focusing on implementing project plans by breaking them down into actionable tasks and assigning responsibilities to team members. The other best positioned responsibility was *establish a good communication with the client* (48%), which refers to maintain a strong working relationship.

Additionally, our research shows that project managers must *analyze and communicate project risks* (43%) by proactively addressing potential challenges of the project. The responsibility *analyzing stakeholders' activities and providing feedback* (34%) means that all project managers need to ensure stakeholders remain informed and engaged throughout the project's progression. *Aligning client expectations with team capabilities* (32%) is very present and helps maintain a shared vision for the project.

The responsibility *budget management* (27%) enables resource allocation and financial control. *Leading continuous improvement tasks* is present in 23% of the job advertisements and cultivates a culture of learning and innovation, driving ongoing project enhancements. *Following a well-established project management process* (20%) ensures consistency and minimizes errors for more predictable outcomes. *Ensuring deliverable* (20%) requires meticulous monitoring and quality control at every project stage. Lastly, *establishing training processes*, present in 20% of the job advertisements, indicates that project managers should empower the team, enabling success in project delivery.

4.3 RQ3: What Skills Are Necessary for Entry-Level Software Project Managers?

We found 30 skills expected for entry-level project managers. Table 2 presents the ten most commonly cited. This table reports the skill name, its type (hard (H) or soft (S)), its definition, quotes, and the total number (i.e., count) of citations (#CS), i.e., the number of job advertisements in which the skill was found. The column %CS presents the percentage of #CS about the total job advertisements (43) that cited at least one skill. It reveals how frequently each skill was cited in entry-level project manager job advertisements. The complete list of skills is available at here.

Communication skills and *technical knowledge* were the most frequently cited skills, both present in 53% of the job advertisements. Project managers need to convey information, ideas, and instructions clearly and effectively. Also, they should understand and have expertise in the technical aspects relevant to the project to effectively convey project goals and guide team members through technical complexities.

Other commonly present skill was *planning/managing*, noted in 49% of the advertisements. It refers to the ability of developing strategic project plans and allocate resources effectively. Project managers should also have *problem-solving skills*, so when challenges arise, they are able to find innovative solutions. We can also see that *organizational skills* was present in 35% of the job advertisements, indicating that project managers have to ensure tasks and documentation are well-managed and contributing to project efficiency. Software industry is searching for project managers who can effectively communicate with stakeholders, plan project execution, navigate challenges, and maintain organized workflows.

Additionally, Table 2 shows that *teamwork skills* is present in 30% of the job advertisements, meaning that a project manager needs to create a collaborative and motivated team environment. *Project management framework/software skills* (28%) highlights the importance of the ability to optimize the workflows and monitors progress effectively. *Domain knowledge* and *agile skills*, with a presence of 23%, indicate that project managers need to make informed decisions and adapt to changes in the project's domain and requirements. Lastly, *project management concepts skills* (21%) mean that project managers ensure that projects follow best practices.

Table 1: Responsibilities for entry-level project managers.

NO	Responsibility	Definition	Quote	#CR	%CR
1st	Plan, organize and coordinate team activities	Developing a strategic roadmap, allocating resources, and efficiently managing the team's tasks and activities to achieve project goals.	Monitor and ensure efficient, timely project delivery to a high standard. Compile project plan tasks and dates.	36	82%
2nd	Establish a good communication with the client	Build and maintain effective and open channels of communication with the client.	Serve as the main point of contact for clients during project implementation. Maintaining and accurately reporting and documenting ongoing communications with existing customers.	21	48%
3rd	Analyze and communicate project risks	Identify potential challenges or risks that may impact the project's success, addressing them, and communicating these risks to stakeholders for informed decision-making.	Highlight risks and assumptions throughout the project. Handle risk management and contingency planning.	19	43%
4th	Analyze stakeholder's activities to provide feedback	Observe and evaluate stakeholders' involvement and contributions to the project, and offer a constructive feedback.	Conduct performance reviews and provide mentor team members. Attend project meetings and provide status updates to the Project Manager.	15	34%
5th	Make an alignment of client expectations	Ensure the client's expectations are aligned with the capabilities and resources of the project team.	Define clear project objectives with clients and colleagues. Set and uphold standards for delivery excellence and client service.	14	32%
6th	Budget management	Manage project finances, including budget allocation, tracking expenses, and ensuring that the project remains within the approved budget.	Construct and monitor project budgets. Financial health and budget management.	12	27%
7th	Lead continuous improvement tasks	Initiate and guide efforts to continuously improve project processes, methods, and outcomes.	Continuously identify areas for improvement and implement process improvements to increase efficiency and quality. Participate in process improvement efforts.	10	23%
8th	Follow a well establish project management process	Adhere to established and proven project management methodologies, frameworks, and best practices.	Promote and follow a defined project management process and implement best practices for project management. Apply project management best practices to meet project plan, time and scope objectives.	9	20%
9th	Ensure deliverable are achieved	Monitor project progress to ensure that all project deliverable are completed and meet the required quality standards.	Ensuring all project plan and contractual commitments are achieved. Ensure all project documentation is complete, up-to-date, and accessible to relevant stakeholders.	9	20%
10th	Establish and implement training processes	Design and implement training programs to equip the team with the necessary skills and knowledge.	Establish and implement training processes and strategies for all technical personnel. Accomplishes orienting, training, assigning, scheduling, and coaching employees	9	20%

4.3.1 Hard and Soft Skills

Some of the identified skills are **soft skills**, i.e., they are related to personal attributes that enhance an individual's interactions and job performance (Hendarman and Tjakraatmadja, 2012) (e.g., *communication skills, planning / managing skills, problem solving skills, organization skills, and team work skills*). Others are **hard skills** as they are associated with a person's proficiency and capacity to execute specific tasks or activities (Hendarman and Tjakraatmadja, 2012) (e.g., *technical knowledge, project management framework/software skills, domain knowledge, agile skills, and project management concepts skills*).

Table 3 presents the two types, the number of skills of each type (#S), and the total number (i.e., count) of citations (#C). Column %CS presents how frequently soft and hard skills are mentioned in job ads. Although there are more hard than soft skills, soft skills are more commonly expected in job advertisements.

5 DISCUSSION

The first actionable result for practitioners is: in the LinkedIn job repository, checking the content of the ad is crucial, as the job title does not always bring the required level of experience.

Interestingly, we rarely find mentions to specific tools or techniques. On the contrary, broad knowledge on the area is expected. This poses more challenges for those interested in starting a project manager career, because it can take some time until get enough knowledge in such a vast area. Besides, it can make it harder to make decisions on how to pursue expected technical knowledge and skills.

Overall, the expected responsibilities are the same regardless the process model followed by the organization. *Plan, organize and coordinate team activities, analyze stakeholder's activities to provide feedback, establish a good communication with the client, and analyze and communicate project risks* are amongst the most commonly expected responsibilities. Concerning skills, there are slightly differences in the list of the most expected per process model (traditional or agile). Interestingly, the top 10 ranked responsibil-

Table 2: Skills for entry-level project managers.

NO	Type	Skill	Definition	Quote	#CS	%CS
1st	S	Communication	The ability to effectively convey information, ideas, and instructions to others, fostering clear understanding and collaboration among team members and stakeholders.	Excellent written and verbal communication skills. Ability to communicate difficult concepts using terminology appropriate to the audience.	23	53%
2nd	H	Technical knowledge	Understand and have expertise in the technical aspects relevant to the project, enabling informed decision-making, guidance to team members, and addressing technical challenges.	Understanding of video middleware stacks like RDK, Android TV, hardware/software. Proficient knowledge of Excel and VBA.	23	53%
3rd	S	Planning/managing	Proficiency in developing strategic project plans and allocating resources efficiently to ensure projects stay on track and meet goals within set timelines and budgets.	Ability to work effectively within a fast-paced, deadline-driven environment. Effective prioritization and meeting deadlines.	21	49%
4th	S	Organization	The ability to maintain order and efficiently manage tasks, documents, and resources, contributing to overall project efficiency and effectiveness.	You are highly organized and care deeply about building and growing a sustainable, culture-conscious business. Excellent organizational skills and ability to manage multiple priorities effectively.	16	37%
5th	S	Problem solving	The capacity to identify, analyze, and find innovative solutions to challenges and obstacles that arise during the project's execution.	Ability to identify complex problems and reviewing related information to develop and evaluate options and implement solutions. Strong analytical and problem-solving abilities.	15	35%
6th	S	Team work	The ability to foster a collaborative and motivated team environment, promoting cooperation and collective effort towards project goals.	Ability to maintain a positive, team-oriented attitude. Ability to manage complex relationships among stakeholders on a project which has significant executive oversight.	13	30%
7th	H	Project management framework/software	Proficiency in utilizing project management tools and methodologies to optimize project workflows, monitor progress, and enhance project outcomes.	Efficient in project management tools like MS project, JIRA, VISIO, SharePoint, Adobe etc. Experience using Jira and Confluence.	12	28%
8th	H	Domain knowledge	Expertise in the specific industry or field of the project.	Knowledge of healthcare, medicare and medicaid systems and data. Experience overseeing a construction project.	10	23%
9th	H	Agile	Competence in agile methodologies, which emphasize flexibility, iterative approaches, and adaptability to changing project requirements and environments.	Agile project management skills in infrastructure projects. Knowledge of agile practices and methods.	10	23%
10th	H	Project management concepts	Understanding of fundamental project management principles and practices, guiding effective decision-making and successful project execution.	Knowledge of project management techniques.	9	21%

Table 3: Types of skills for entry-level project managers.

Type of skill	#S	#C	%CS
Hard skill	18	87	41%
Soft skill	12	126	59%

ities and skills confirm how the body of knowledge in project management defines, in general, a project manager role.

For organizations, we provide an extensive list of expected responsibilities and skills. Organizations can now clearly articulate their expectations when hiring entry-level project managers by identifying the core skills and responsibilities associated with them. We also recommend clearly state in the title of the job ad the level of experience required for a specific position.

For educators, there are also valuable insights. Results pointed out that both technical and soft skills are highly expected. However, soft skills are slightly more commonly requested on job ads. Technical skills have already been taken into consideration in project management courses for a long time. However, the same does not hold for soft skills. For instance: which courses (at the undergraduate and graduate levels) have employed practices to improve students' skills such as communication, teamwork abil-

ity, problem solving, be organized, and others? Our results can serve as a starting point to develop new training strategies in the skills and qualifications for performing project management activities (responsibilities) required for entry-level project manager positions. Software engineering educators can support these development by conducting pedagogical interventions to assess these strategies with their students.

6 THREATS TO VALIDITY

We identified some threats to validity:

Construct validity. A threat emerges as the LinkedIn platform can suggest job ads according to profile information. To mitigate this threat, we defined a new profile and used it to search the job ads. Another threat stems from the fact that we only chose the LinkedIn as a source to collect the ads. We recognize that this is a limitation of our work.

Internal validity. We identified the threat associated with the format of the ads. When the extracted elements (responsibilities and skills) are not in different sections of a job ad. The first author extracted and classified them. Next, the last author reviewed the list of responsibilities and skills, minimizing this threat.

External validity. This threat relates to the reasonableness of generalizing our conclusions. We can not generalize our results. Our sample size is limited to the analyses of 50 job ads and refers to entry-level software project manager positions from only one country. However, we stopped to collect new job ads when we reached a state of saturation in the codes for responsibilities and skills. We did not find any new code in the last five job ads analysed.

Conclusion validity. This threat is related to the procedures we followed to standardize the nomenclature of responsibilities and skills, and classify the identified skills into soft or hard skills. To reduce this threat, the aforementioned procedures were performed by two researchers individually. Divergences between them were resolved in a meeting.

7 FINAL REMARKS

This study investigates the responsibilities and skills required for entry-level software project managers through the analysis of online job ads on the LinkedIn platform. It also reports the group of responsibilities and skills required in combination. Results reveal that *plan, organize and coordinate team activities, establish a good communication with the client, and analyze and communicate project risks* are amongst the responsibilities that organizations pay more attention. Concerning skills, *communication, technical knowledge, and planning/managing* are amongst the most commonly found.

Researchers can utilize the findings to gain insights into current job market trends and project management role expectations. Professionals benefit from information on responsibilities and skills, enabling them to enhance their career development and align their qualifications with industry demands. Finally, organizations can refine their hiring strategies based on the study's insights.

The next steps of this work include to (i) expand our data source by considering job ads from different countries, and (ii) organize the set of responsibilities and skills in evidence briefings that could be used to guide both professionals and organizations interested on project management roles.

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