

## MARKETING IN IT INDUSTRY: AN ANALYSIS OF GRADUATES' COMPETENCIES AND CAREER PATHS

Jelena Spajić<sup>1</sup> [0000-0003-2890-969X], Nikolina Milošević<sup>2</sup> [0009-0004-1203-1004],  
Dunja Bošković<sup>3</sup> [0000-0003-3313-661X], Bojana Milić<sup>4</sup> [0000-0001-6327-6424],  
Danijela Lalić<sup>5</sup> [0000-0002- 1277-5116]

### Abstract

The importance of marketing in the IT industry cannot be overstated, since it helps the identification and fulfilment of customer needs through tailored technological solutions. Well-educated marketing professionals are essential for the IT industry to develop effective communication strategies and foster strong customer relationships for all stakeholders. In order to better prepare graduates for the multidisciplinary problems of the IT industry, this article highlights the need for higher education institutions, particularly those offering business-oriented study programs, to modify their curricula to incorporate both marketing and IT disciplines. Therefore, this study investigates the readiness of marketing graduates for employment in the IT sector by analyzing their employment status, experiences, and skill sets. Through a focus group of the best marketing graduates from the Faculty of Technical Sciences' Engineering Management study program, we evaluate the competencies they possessed upon entering the workforce and identify gaps in their preparation. The results provide insights into the types of roles these graduates occupy, the challenges they encounter, and the additional skills required to succeed in the tech industry. This study provides valuable information for educators and industry professionals to better align business-oriented degree programs that have a marketing module with the demands of the IT industry.

**Key words:** marketing, IT industry, students, employability, competencies, skills.

<sup>1</sup> University of Novi Sad, Faculty of Technical Sciences, Serbia, stankovicj@uns.ac.rs

<sup>2</sup> University of Novi Sad, Faculty of Technical Sciences, Serbia, milosevicnikolina@uns.ac.rs

<sup>3</sup> University of Novi Sad, Faculty of Technical Sciences, Serbia, dunja.vujicic@uns.ac.rs

<sup>4</sup> University of Novi Sad, Faculty of Technical Sciences, Serbia, bojana.milic@uns.ac.rs

<sup>5</sup> University of Novi Sad, Faculty of Technical Sciences, Serbia, danijela.lalic@uns.ac.rs

## 1. Introduction

The integration of marketing concepts and courses into IT and engineering higher education is increasingly recognized as essential for preparing graduates for the complexities of the modern job market. This necessity stems from the evolving nature of the workforce, where technical skills alone are insufficient for success. This research indicates that graduates must possess a blend of hard and soft skills, with the latter being particularly critical in fields such as IT and engineering. For instance, emphasize that soft skills significantly enhance employability, suggesting that graduates should actively develop these competencies alongside their technical training (Basir et al., 2022).

The empirical section of this paper presents the findings from a focus group composed of Engineering Management graduates from the Faculty of Technical Sciences. Specifically, the analysis focuses on the competencies and career paths of top-performing graduates from the Engineering Marketing and Multimedia module.

## 2. Theoretical background

The theory highlights the importance of addressing soft skill gaps in the digital employment market, indicating that students often lack the necessary interpersonal skills that are crucial for success in technology-driven environments (Ramos-Monge, 2023). These findings indicate that students lack key soft skills, particularly social intelligence, stress management, and self-awareness, which are crucial for success in both academic and professional settings, as well as for adapting to the digital employment market. The soft skills researchers highlight as most critical for (digital) employability (e.g. Mekala et al., 2020; Qadir et al., 2020) are the same ones students recognize as their weaknesses, based on previous failures (Milić et al., 2023).

Rashid (2003) explored factors influencing employability from employers' perspectives, identifying poor English proficiency, lack of self-confidence, critical thinking, and innovation skills as key barriers. However, Ting et al. (2017) found that employers are still willing to hire graduates with only average English proficiency if they possess strong communication skills, which are shown to enhance employability. Work experience gained through internships and creative enterprise courses significantly enhances graduate employability. This is consistent with earlier studies showing that practical experience improves employability (e.g. Chavan & Carter, 2018).

While academic performance may not be the strongest predictor of graduate employability, it still plays a key role in creating a positive impression on potential employers (Basir et al., 2022).

Moreover, the demand for soft skills in the IT industry is underscored by studies that reveal employers prioritize these attributes when hiring. For example, argue that soft skills have become a crucial determinant of long-term job success, surpassing traditional technical skills (Ramalingam et al., 2021). Subject knowledge

and technical skills are no longer the primary determinants of employability; instead, soft skills are essential for long-term career success. Consequently, Higher Education Institutions (HEIs) globally face pressure to produce graduates with the right skill set for the job market (Ramalingam et al., 2021). This sentiment is echoed by several authors (Finch et al., 2013), who identify problem-solving and communication as key skills that employers assess during the hiring process, reinforcing the need for HEIs to incorporate these elements into their curricula. The integration of marketing principles can further enhance students' understanding of market dynamics, customer relations, and strategic thinking, which are invaluable in the IT sector (Milić et al., 2023). The results of the previous research (Spajić, 2024) which includes the review of curriculum from European IT universities and the practices at Faculty of Technical Sciences align in the view that studying marketing subjects is significant for the career development of future IT engineers.

In terms of employability factors for business students, research consistently highlights the importance of soft skills, including communication, teamwork, and leadership, as essential for securing and maintaining employment (Loday & Drukpa, 2021). This is particularly relevant in the context of the IT industry, where collaboration and effective communication are paramount. Additionally, students' perceptions of their employability are closely linked to their soft skill development, suggesting that educational strategies should focus on enhancing these competencies (Yao & Tuliao, 2019). Furthermore, Fadhil & Ismail (2021) have examined the impact of soft skills on employability in the technology sector, since selecting the best candidates will improve performance and lead to business success. This research revealed that communication, attitude, integrity, learnability, motivation, and teamwork are strongly correlated with employability, making these soft skills crucial for success in Malaysian technology firms. This aligns with the findings that a well-rounded skill set that includes both technical and soft skills is essential for graduates to thrive in the labor market (Hurrell et al., 2012). The emphasis on soft skills is not only a response to employer demands but also a recognition of the changing nature of work, where interpersonal interactions and adaptability are increasingly valued. Connell et al. (2014) have concluded that while ICT competencies are important, they must be complemented by soft skills essential for effective customer interactions and autonomous, flexible work teams, which positively influence job quality outcomes.

In summary, the integration of marketing concepts and soft skills training into IT and engineering higher education is vital for enhancing graduates' employability. The evidence suggests that a curriculum that balances technical knowledge with soft skills development will better prepare students for the challenges of the modern workforce, particularly in the IT industry.

### 3. Research methodology

A survey of one group of IT students at FTS (Milić, et al., 2023) reveals a shift in the perception of soft skills, with students recognizing the importance of non-

technical skills for the industry, while considering their own skills underdeveloped. Secondary research, curriculum reviews from European IT universities, and FTS practice concur that marketing studies are crucial for the career development of future IT engineers (Spajić et al., 2024). To fully understand the student-faculty-business relationship, this research should monitor the performance and satisfaction of FTS graduates in IT companies. IT firms in Novi Sad, Serbia acknowledge the value of marketing, applying branding and positioning strategies, with FTS graduates holding key roles in both IT and marketing sectors (Spajić et al., 2024).

To gain insight into the competencies and career paths of FTS *Engineering Management* students, focus group research was conducted. The participants, all top-performing graduates from the *Engineering Marketing and Multimedia* module, represented various IT companies in Novi Sad with diverse work experience.

Table 1 provides an overview of general information about the respondents who participated in the research.

*Table 1: General information about focus group participants*

No.	Company name	The name of position	Length of employment in IT	Finding the first job in IT
1	<i>Symphony</i>	Employee Experience Strategist	2,5 y	During the studies
2	<i>Hybrid Digital</i>	Lead Performance Marketing Manager	3 y	3 mo
3	<i>ARS Embedded Systems</i>	Communications manager	1,5 y	During the studies
4	<i>Devoteam</i>	Marketing Specialist	7,5 y	3 mo
5	<i>Vega IT</i>	Lead Marketing Manager	5 y	1,5 y
6	<i>Continental Automotive Serbia</i>	Head of Plant Communications	1 y	1 mo
7	<i>Inviggo</i>	Marketing manager	2 y	During the studies
8	<i>Solflare</i>	Office manager/HR associate	7 y	During the studies
9	<i>Schneider Electric</i>	Employer Branding Associate	1,5 y	3 mo
10	<i>Valcon</i>	Social media manager	0,5 y	6 mo
11	<i>Vega IT</i>	Marketing manager	3,5 y	1 y

The average employment in the IT industry of respondents is 3.5 years, and the average time they've spent looking for a marketing job in IT industry is 4,18 months, although it can be noted that the third of the respondents found employment during their studies, mostly in the final years of undergraduate and master's studies.

For this research, a questionnaire consisting of two parts was used. The first part focused on the quality of the *Engineering Marketing and Multimedia (EMM)* module, and the second part addressed the overall quality of the study program. The

qualitative and quantitative data from this research provide a solid foundation for further studies. A portion of the results is presented below.

## 4. Research results

The research aimed to assess the alignment between the knowledge and skills acquired in the *EMM* module at EM FTS and the actual demands of the IT industry. It explored which competencies are most applicable in professional roles, identified skill gaps among graduates, and highlighted the top technical and soft skills required for success in IT marketing. The aim was to identify curriculum improvements and additional training needs for graduates entering the workforce.

All respondents emphasized the critical role of soft skills for employment in the IT industry, particularly in marketing roles, and identified the following as the most essential: *Communication, Analytical, Organizational and Leadership skills, Team work, Adaptability and flexibility, Creative thinking, Presentation skills, Critical thinking, Proactivity and self-initiative, Customer relations, Design Thinking, Transparency and integrity, Curiosity and constant improvement*.

The technical skills expected from EM FTS graduates in marketing roles in the IT sector are summarized in Table 2.

Table 2: Review of technical skills of marketing graduates in IT industry

Technical skills	The examples of software or tools
<b>Adobe programs</b>	Photoshop, Illustrator, Adobe Premiere Pro
<b>Microsoft Office</b>	Word, Excel, PowerPoint
<b>Digital marketing tools</b>	Google Analytics, Matomo, SEO tools, E-mail marketing: Mailchimp, Pardot
<b>Project Management software</b>	Asana, Trello, Jira, Teamwork, Miro
<b>Content Creation tools</b>	Canva, CapCut.
<b>Social Media Marketing</b>	Google Ads, Facebook Ads, Meta, Hootsuite, FB Creator Studio, Semrush, Google Tag Manager, Google Analytics, Google Ad Manager, Facebook Ad Manager, LinkedIn Campaign Manager
<b>Content Management Systems</b>	Umbraco, Salesforce, HubSpot.
<b>G-suite</b>	Gmail, Google Calendar, Google Tag Manager, Google Drive (Docs, Sheets, Slides...)
<b>Product development technologies</b>	Flutter, Node.js, React, React Native.
<b>Graphic design</b>	Figma, Photoshop, Illustrator.

In addition to the identified skills, respondents highlighted foundational knowledge in IT terminology, English language, copywriting, camera operation, and basic photography as essential, and lead generation as a primary skill.

As a part of this research, the participants in the focus group were asked the following question: How likely is it that you would recommend a colleague with a bachelor/master's degree in Engineering Management, FTS for employment in your (or another) company? This simple question (How likely is it that you would recommend [Organization X/Product Y/Service Z] to a friend or colleague?) measures customer perception and is a widely used metric in customer experience programs that assesses customer loyalty through their likelihood of recommending a business (Qualtrics). It is called Net Promoter Score (NPS) and is measured via a single-question survey, with scores ranging from -100 to +100, where higher scores are preferred. Respondents rate from 0 (not likely) to 10 (extremely likely), placing them into one of three categories to determine the NPS score (Reichheld, 2003):

- **Promoters** (9 or 10 scores) - typically loyal and enthusiastic customers.
- **Passives** (7 or 8 scores) - satisfied with a service but not happy enough to be considered promoters.
- **Detractors** (0 to 6 scores) - unhappy customers, unlikely to buy again and may discourage others from doing so.

According to NPS formula: **NPS = % of Promoters ( — ) % of Detractors**, our research participants are a “world-class promoters” (table 3).

*Table 3: Net Promoter Score for EM FTS-Mktg students*

NPS categories	Score	% of respondents	Total
Promoters	10	64,3%	<b>92,9</b>
	9	28,6%	
Passives	8	7,1%	<b>7,1</b>
	7	0%	
Detractors	0 to 6	0%	<b>0</b>
<b>NPS=92,9%</b>			

Bain & Company suggests the following scoring framework (Reichheld, 2003): NPS>0 is good, NPS>20 is favorable, NPS>50 is excellent, and NPS>80 is world-class. A major limitation of this result is the small sample size, consisting primarily of respondents generally satisfied with their employment and work environment. This parameter requires ongoing measurement and monitoring, and future research should include a larger group of EM-FTS alumni.

## 5. Discussion and conclusions

The soft skills identified in this research align closely with those found in previous studies reviewed in the theoretical background section. However, during the focus group discussions, participants noted that some important technical skills were lacking upon entering the workforce, requiring additional training in areas

such as lead generation, graphic design, advanced project management tools, and product development technology. Additionally, all participants indicated that foundational knowledge of IT terminology would be beneficial, though it was universally lacking upon entering employment.

To address these gaps, improvements to the *Engineering Marketing and Multimedia* module within the *Engineering Management* program at FTS could involve revising the course structure and enhancing the curriculum. Introducing elective courses in information technology and project management may be an effective response to current trends in the IT industry.

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