

# Quantitative Analysis of Competencies from Glassdoor Job Descriptions: Digital Marketing Versus Traditional Marketing Positions

Serhiy Bobrytskyy, Ing.<sup>1</sup> – Václav Strítěský, doc. Ph.D. Ing.<sup>2</sup>

ORCID: 0009-0009-2076-3439<sup>1</sup>, ORCID: 0000-0002-1513-7937<sup>2</sup>

bobs00@vse.cz, vaclav.stritesky@vse.cz,

University of Economics and Business, Faculty of Business Administration,  
Department of Marketing, Prague, Czech Republic

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**Abstract:** The rapid digitalization of industries necessitates a shift in the skills and competencies of marketing professionals. Despite this transformation, there persists a tendency to treat digital marketing as an extension of traditional marketing, lacking recognition of the specific skills required for digital roles. This research aimed to bridge this gap by quantitatively analysing job descriptions from job and recruiting website Glassdoor to identify and compare the distinct skills needed for digital and traditional marketing roles. Principal Component Analysis was employed to derive six factors representing main skill groups. Logistic regression was used to reveal distinct competencies between digital and traditional marketing roles, emphasizing the importance of social media and CRM for digital marketing and Sales and Communication for traditional roles. From company and position aspects only Working with an Agency was found significant for digital marketers. Understanding the competencies will enhance digital marketing theory and can help universities and companies in educating digital marketers and preparing them for the future.

**Keywords:** competencies, skills, digital marketing, traditional marketing, Glassdoor, quantitative analysis

**JEL Classification codes:** M31, M12, M51

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## INTRODUCTION

In the past 15 years, the rapid development of new technologies has initiated a profound digital transformation, disrupting industries, businesses, consumer behavior, and employment landscapes. This shift mirrors the previous revolution in marketing, prompting urgent adaptations in mindset, knowledge, and skillsets across all professional levels (Stone, 2014). Nowadays, the digital transformation of businesses and media has revolutionized the role of digital marketing within the organization and represents a change in history (Kovacs, 2021; Royle & Laing, 2014). However, companies and educational institutions still treat digital marketing as part of traditional marketing, failing to recognize the distinct skills and competencies required. Furthermore, existing literature predominantly focuses on digital tools and strategies rather than on competencies required by digital marketers. Recent systematic reviews on digital marketing (Dwivedi et al., 2021; Kannan & Li, 2017) have highlighted this issue, urging scholars to understand digital marketing competencies. Additionally, there is an overall gap in understanding how firms and universities should educate digital marketers and how the curriculum should be different from traditional marketing courses (Zahay et al., 2019).

Several existing studies have attempted to explore key digital marketing competencies, yielding a wide range of skills applicable to any marketing role (e.g., brand manager, trade

marketing manager, or digital marketing specialist), including business skills, finance skills, presentation skills, teamwork, communication, technical skills, etc. (Kovacs, 2021; Royle & Laing, 2014; Wymbs, 2011). One of the reasons for such results is that these studies treated digital marketing as a universal function without considering different roles and industry-specific aspects. For instance, the skill set required for an in-house search engine specialist differs significantly from a digital marketing coordinator working in a manufacturing company. Moreover, studies on digital marketing competencies typically rely on interviews with digital managers and industry experts, and to the best of the authors' knowledge, none have utilized actual job descriptions and job advertisements. This approach limits the scope of identified skills and complicates capturing the differences between digital marketing and traditional marketing roles. Furthermore, existing research on digital marketing competencies remains predominantly qualitative, lacking quantitative insights. Therefore, this research aims to leverage actual job descriptions from the Glassdoor website to identify the skills required in digital marketing and traditional marketing disciplines and quantitatively investigate key factors influencing the likelihood of a position being classified under traditional or digital marketing.

Understanding the competencies of digital marketing holds both theoretical and practical implications: a) advancing digital marketing theory through a quantitative examination of competency differences; b) providing a comprehensive overview of required skills in digital marketing and traditional marketing; c) assisting universities in educating digital marketers and preparing them for the future, as well as aiding companies in defining appropriate job descriptions and selecting suitable candidates.

This research addresses the gap in understanding digital marketing competencies versus traditional marketing competencies by first, an extensive literature review; second, identifying key gaps and limitations in the previous studies, leading to the development of a conceptual framework and hypotheses; third, proposing an innovative data collection methods and research design to analyze the digital marketing versus marketing competencies and different aspects such as workplace arrangements, working with agencies and company size.

## **1. LITERATURE REVIEW**

Digital marketing is a complex discipline that integrates multiple platforms, channels, instruments, and strategies. To properly understand the potential competencies required for digital marketing, it is important to have a clear definition of the discipline. Kannan & Li (2017), in their extensive systematic review, provide a streamlined definition of digital marketing: "Digital marketing is the adaptive, technology-ended process by which firms collaborate with customers and partners to jointly create, communicate, deliver, and sustain value for all stakeholders" (p. 23). This definition divides the digital marketing role into two wide perspectives: from one side, the implementation of digital technologies, and from the other side, how technology creates value through processes and collaboration with customers and partners. Already from the definition, it is apparent that digital marketing is complex and requires two different approaches: first - technical and second - coordination (managing the "process") (Kannan & Li, 2017). Such a theoretical view brings us to the idea that digital marketing cannot be viewed as a unified function and thus should be divided into two wide categories. One category of digital marketers is masters in specific areas of digital instruments and technologies and have specific expertise to implement those technologies. Another category of digital marketers represents masters of holding digital processes and have specific skills in managing external and internal stakeholders. The competencies of the second group of digital marketers are often considered by scholars as complementary to traditional marketing (Zahay et al., 2019). Nevertheless, the research investigating digital marketing

competencies can be divided into three categories: 1) Digital marketing competencies and education; 2) Digital Marketing competencies in the B2C industry; 3) Digital Marketing competencies in the B2B industry.

The first group of studies focuses on digital marketing education, exploring various methodologies for educating digital marketers and identifying the most critical competencies for student development. A series of studies (Langan et al., 2019; Reavey et al., 2021; Zahay et al., 2019) dedicated to the curricula of digital marketing programs have identified digital marketing as a distinct discipline for several reasons: a) large number of instruments, and different areas; b) strong connection with marketing; c) wide theoretical background about digital strategy; d) amount of training and outside industry support that is required. Depending on which aspects from the list above are fulfilled by an educational institution, it can define the prerequisites for a student to become either a digital marketing specialist or a marketing generalist (Langan et al., 2019). According to Reavey et al. (2021), most of the existing digital courses and programs are preparing students to be digital marketing generalists, as they provide very broad knowledge about digital marketing and focus rather on developing soft skills (coordination, teamwork, presentation skills), than practical knowledge about specific instruments and tools. Consequently, such graduates possess a general understanding of digital marketing but lack technical expertise, as universities often lack the data, content, and time to effectively teach digital instruments (Zahay et al., 2019). Zahay et al. (2019) conclude that such graduates are typically overprepared in theory and under-prepared in technical skills, often ending up in traditional marketing roles. On the other hand, Langan et al. (2019) in his research state that universities that have integrated specific digital marketing specializations, whether as majors or minors, are more likely to prepare students for careers as digital marketing specialists. These advanced programs typically encompass all mentioned before criteria: offering dedicated technology courses (e.g., SEO, social media, inbound marketing), integrating foundational marketing principles with digital marketing strategy, and engaging industry experts to provide real-time training through the utilization of external software programs and applications (Zahay et al., 2019).

The second group of studies focuses on digital marketing competencies within the B2C industry, primarily encompassing brand manufacturers and service providers targeting end consumers. Key et al. (2019) investigated the requisite competencies for graduates and professionals seeking roles in digital marketing within B2C companies. Their findings highlight that digital marketing managers in such enterprises are typically tasked with coordinating multiple external vendors (e.g., social media agencies, digital agencies) and formulating or adhering to the organization's digital marketing strategy. While these professionals are not expected to possess profound expertise in HTML, website design, coding, or other advanced technical aspects, they are nonetheless mandated to possess fundamental marketing knowledge, a comprehensive understanding of digital marketing concepts, and specific soft skills, such as effective communication and presentation abilities (Key et al., 2019). Key et al. (2019) further state that individuals who obtained Google Ads Certification and have experience in designing and executing Google Ads enjoy a significant competitive advantage when applying for digital marketing roles in B2C companies. Similar conclusions were obtained in the research of Veer and Dobele (2019) who conducted a study among digital and marketing managers predominantly working in the B2C sector. Veer and Dobele (2019) in their research identified a set of core competencies essential for digital marketers working in the B2C industry: communication skills, relationship building, presentation skills, understanding digital tools, copywriting, and creativity. Furthermore, most participants self-reported having limited technical knowledge of digital tools but understanding their underlying principles. Another significant finding from the research is that most of the participants indicated that for their

area of responsibility, they need "broad-based" knowledge about digital marketing over an in-depth one.

The third group of studies focuses on digital marketing competencies in the B2B industry, encompassing digital marketing, creative, advertising, or data agencies that offer services to other businesses (Royle & Laing, 2014). According to Kolding et al. (2018), research companies in the B2B industry have often high expectations about technical knowledge for digital marketing candidates. In some cases digital agencies or companies can hire a generalist who fits the organization without deep technical knowledge, however, this person will be subjected to intensive training and upskilling within their area of responsibility, aiming to transition from generalists to specialists (Kolding et al., 2018). This transition is only feasible within organizations that have strong in-house digital teams. Nevertheless, most of the companies in the B2B sector require strong technical skills and a person being a specialist from the very beginning "otherwise, the cost of the new skills will be too high" for the organization (Kolding et al., 2018). Kovacs (2021) and Royle & Laing (2014) in their research tried to explore the fundamental competencies of digital marketing managers in the B2B sector through qualitative research. These scholars conclude that digital marketers must possess a broad spectrum of skills. The identified skill sets include soft skills (flexibility, teamwork, interpersonal skills, motivation, oral communication, presentation skills, stress resilience), digital and technical proficiency (comprehensive knowledge of specific tools and software), core marketing abilities (planning, organization, time management, content creation, creative thinking, attention to detail, sales knowledge, management skills, ability to manage multiple projects, marketing tasks), analytical skills (statistical knowledge, problem-solving, critical thinking, ability to synthesize information, data orientation), and customer insights skills (CRM, research methods, understanding of company, touchpoints, and customers). Nevertheless, these studies fail to address the rationale behind the importance of the above-listed skills for all digital marketing professionals in comparison to traditional marketing roles, as well as why the skill set is so wide. The skills presented in the research can be easily applicable to any other marketing or business functions.

The primary limitations of all the above-mentioned studies are that they relied solely on interview outcomes to identify competencies, without incorporating actual job descriptions for digital marketing roles. Additionally, they treated digital marketing as a universal function, overlooking the diverse industry and company-specific aspects that can influence the required skills. Consequently, these studies identified extensive lists of skills that could apply to various marketing or digital marketing roles. Furthermore, all the described studies employed qualitative research methods, lacking subsequent statistical testing of the proposed models. Hence, the authors have identified the most significant research gap as the absence of a quantitative study that confirms the distinctions between digital marketing and traditional marketing competencies, considering industry, company, and position-specific aspects.

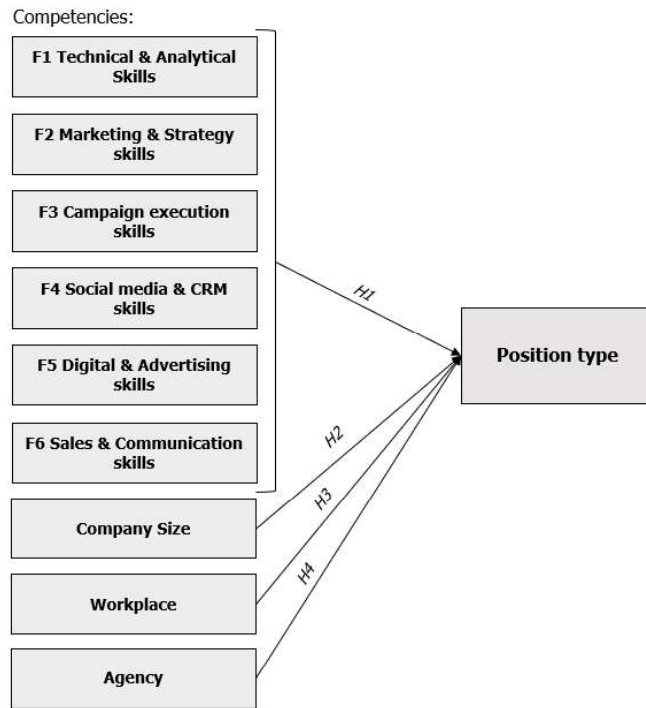
## **2. METHODOLOGY**

### **2.1 Objectives and conceptual model**

To address the research gap defined by authors, two primary research goals have been established: 1) to find out whether there exists a difference between digital marketing and traditional marketing competencies; 2) to investigate the relationships among competencies, company/position aspects, and the likelihood of a position being classified under traditional or digital marketing. To accomplish these research goals, a conceptual framework has been

developed to illustrate the relationships among various competencies, company/position aspects, and position type (see Fig. 1). The left side of the conceptual framework illustrates the key competencies and company/position aspects such as company size, workplace environment, and agency involvement that might influence the type of position. The derivation of these competencies is explained in the data description section (See pages 6-9). On the right side of the conceptual framework, there is a dependent binary variable Position Type where digital marketing is 1 and traditional marketing is 0.

**Fig. 1. Conceptual framework**



Source: Authors

**Digital marketing vs traditional marketing competencies:** as previously mentioned, scholarly research often fails to distinguish between digital marketing competencies and traditional marketing competencies, often treating them as identical or complementary (Zahay & Roberts, 2017; Kovacs, 2021; Royle & Laing, 2014). However, another body of research (Langan et al., 2019; Reavey et al., 2021; Key et al., 2019) suggests that digital marketing demands unique competencies compared to traditional marketing due to the reach set of online instruments and platforms, the broad theoretical background necessary for digital strategy, and the substantial amount of training and practice required.

By analyzing job descriptions from Glassdoor, as outlined in the data description section, the authors identified competencies that could potentially predict whether a position being classified under digital or traditional marketing. Based on this analysis, the following hypothesis was formulated:

**H1:** *There is a relationship between specific competencies (Technical & Analytical Skills, Marketing & Strategy Skills, Campaign Execution Skills, Social Media & CRM Skills, Digital & Advertising Skills, Sales & Communication Skills) and the likelihood of a position being assigned to either a digital or traditional marketing.*

**Company and Position Aspects:** several studies suggest that the difference between digital marketing roles and traditional marketing roles can be influenced by company and position aspects. For example, Key et al. (2019) found that digital marketing managers in B2C companies often need to coordinate multiple external vendors, such as social media agencies or digital agencies. However, these aspects may also vary based on company size and available resources. Additionally, digital marketing roles are more favorable to remote work compared to traditional marketing roles (Stahl, 2022). Building upon these observations, the following hypotheses were stated:

**H2:** *There is a relationship between company size and the likelihood of a position being assigned to either digital or traditional marketing.*

**H3:** *There is a relationship between the type of workplace (on-site, remote, hybrid) and the likelihood of a position being assigned to either digital or traditional marketing.*

**H4:** *There is a relationship between working with an agency and the likelihood of a position being assigned to either digital or traditional marketing.*

## 2.2 Data Description

To test the developed framework and hypotheses, data were collected from the Glassdoor website, which publishes job advertisements from various companies. Glassdoor provides a wide range of information about companies and job descriptions compared to other job search websites. This includes details such as company size, workplace type etc. Data collection was conducted randomly by utilizing a Google Sheets script. The collected job descriptions were for both digital marketing and traditional marketing roles (such as brand managers, trade marketing managers, etc.). The search process involved inputting the keyword "Digital Marketing Manager" into the Glassdoor search tab, getting results, and subsequently employing the script to gather data from the pages. The same process was replicated for the keyword "Marketing Manager". The total sample obtained from the data collection comprised 110 observations (job advertisements): 58 job descriptions for digital marketing positions and 52 for traditional marketing roles. All job advertisements included in the dataset were for positions located in the Czech Republic and were available at the time of collection.

The data collection process proceeded as follows. Firstly, the authors employed a script to collect essential information, including job position title, company name, company size, work arrangement, and a list of required skills for each position. Subsequently, a list of all mentioned skills in the job descriptions was compiled, including duplicates. This resulted in the identification of 126 skills. To ensure accuracy and clarity, duplicate entries were removed, and similar or related skills were merged. For instance, skills like "SEO" and "SEO campaign set-up" were combined. Following these adjustments, a final list of 45 unique skills was generated. Next, the final list of skills was transformed into binary variables. Each job description was reviewed, and a value of 1 was assigned to a skill if it was explicitly mentioned as a requirement for a given position; otherwise, a value of 0 was assigned. The resulting dataset comprised a total of 49 variables, including 47 binary variables representing different skills, an agency variable indicating whether the position requires collaboration with agencies, a position type variable (digital marketing vs traditional marketing position); one ordinal variable representing company size; one nominal variable representing workplace type.

Due to the substantial number of variables, Principal Component Analysis (PCA) was employed to reduce dimensionality and extract essential information while minimizing the loss of valuable insights. Before conducting PCA, an assumptions check was performed, Bartlett's Test of Sphericity yielded a p-value of <0.001, indicating that the correlation matrix is suitable for

conducting PCA. The KMO Measure of Sampling Adequacy for all variables was 0.5, which is below the desired threshold of 0.6. However, this is expected when dealing with binary variables. Thus, based on the assumptions check, the dataset was deemed appropriate for PCA analysis, although the binary nature of the variables poses a limitation on interpretation due to restricted intercorrelation among the variables. PCA analysis was conducted next, with the results provided in Tab. 1.

**Tab. 1 PCA Component Loading**

	Component						Uniqueness
	1	2	3	4	5	6	
Google_Analytics	0.848						0.269
Web_Analytics	0.829						0.295
Google_Tag_Manager	0.737					0.305	0.310
Programming	0.625						0.508
A_B_Testing	0.567					-0.368	0.472
Google_Ads	0.428						0.715
Inbound_marketing	0.364	0.342					0.568
Affinity		0.842					0.282
Business_Writing	0.562	0.629					0.196
Time_Management		0.590					0.624
Critical_Thinking		0.505	0.415				0.534
Budget_Management		0.488					0.719
Brand_Strategy		0.466				0.317	0.527
Project_Management		0.359					0.764
Salesforce			0.717				0.445
Campaign_Management			0.601			0.418	0.403
Cloud_Marketing			0.584				0.655
Multi_Channel_Marketing	0.470		0.539			0.524	0.160
Influencers		0.397	0.468				0.492
Trade_Marketing			-0.442	0.330		0.305	0.555
Social_Media			-0.403	0.354			0.604
Digital_Online_Marketing			0.372		0.364		0.701
Adobe_Skills			-0.360				0.793
Automation			0.355				0.822
Business_Negotiation				0.733			0.419
SQL	0.313			0.714			0.217
SEM				0.640	0.559		0.223
CRM				0.617			0.542
Content_Marketing		0.350		0.550	0.408		0.385
Marketing_Strategy				-0.328			0.747
Website_development							0.969
SEO					0.623	-0.344	0.393
eCommerce					0.620		0.499

	Component						Uniqueness
	1	2	3	4	5	6	
International_Marketing					0.551		0.662
Analytical_Skills					-0.489		0.635
Teamwork					-0.481		0.526
benchmarking					-0.375		0.744
Google_Search					-0.315		0.666
PPC							0.880
Communication						0.602	0.528
Planning				-0.354		0.485	0.557
Landing_Pages						-0.412	0.648
Sales						0.375	0.851
Presentations						0.351	0.786
QlikView						-0.344	0.835

Source: Authors. Note. 'varimax' rotation was used.

Based on the Scree Plot, six factors were retained for further interpretation. The component statistics table reveals that these factors explain 44.17% of the total variance in the dataset. Considering that all variables used in the PCA are binary, the cumulative percentage of 44.17% indicates that the selected components successfully capture a significant amount of variability within the dataset. Finally, factor loadings were reviewed and interpreted for their significance. The following factors were identified:

- **Factor 1.** Data Analytics and Technical Skills. High loadings: Google Analytics, Web Analytics, Google Tag Manager, Programming, A/B Testing, Google Ads. This factor represents competencies related to data analytics and technical skills in digital marketing.
- **Factor 2.** Marketing Strategy and Management. High loadings: Inbound Marketing, Affinity, Business Writing, Time Management, Critical Thinking, Budget Management, Brand Strategy, Project Management. This factor represents competencies related to marketing strategy development, management, and planning.
- **Factor 3.** Campaign Execution and Automation. High loadings: Salesforce, Campaign Management, Cloud Marketing, Multi-Channel Marketing, Influencers campaigns, Automation. This factor represents competencies related to executing marketing campaigns, utilizing cloud-based marketing platforms, and leveraging influencers.
- **Factor 4.** Social Media and Customer Relationship Management. High loadings: Trade Marketing, social media, Business Negotiation, SQL, SEM, CRM, Content Marketing. This factor represents competencies related to social media marketing and customer relationship management, and utilizing tools like SQL, SEM, and CRM.
- **Factor 5.** Digital Advertising and Online Marketing. High loadings: Digital Online Marketing, SEM, SEO, E-commerce, International Marketing. This factor represents competencies related to digital advertising and e-commerce-related activities.



- **Factor 6. Sales and Communication.** High loadings: Communication, Planning, Sales, Presentations. This factor represents competencies related to sales, effective communication, and delivering presentations.

As a result, the initial dataset consisting of 45 binary variables was transformed into 6-factor variables representing different groups of competencies. The final list of variables and their descriptions can be found in Tab. 2. Additionally, Tab. 3 presents descriptive statistics of the dataset, offering key insights into the distribution and summary measures of the variables.

### 2.3. Data Analysis

To test the developed conceptual framework and hypotheses, the authors defined the following dependent and predictor variables. The dependent variable, **Position type**, is a binary variable representing the advertised job role. A value of 1 indicates a Digital Marketing position (e.g., Digital Marketing Managers, Digital Specialists, SEO Specialists, Social Media Specialists), while a value of 0 indicates a Traditional Marketing role (e.g., Brand Manager, Trade Marketing, Marketing Specialists).

**Tab. 2 Description of Variables**

Variable	Description
Company size	Ordinal variable indicating company size: 1: 11-50 employees, 2: 51-200 employees, 3: 501-1,000 employees, 4: 1,001-5,000 employees, 5: 5,001-10,000 employees, 6: 10,001 or more employees.
Agency	Binary variable indicating whether the position requires working with agencies: 1: Yes, 0: No.
Position type	Binary variable indicating whether the position is digital marketing or traditional marketing: 1: Digital Marketing, 0: Traditional Marketing.
Workplace	Nominal variable indicating the work arrangement: 0: Remote, 1: On-site, 2: Hybrid.
Technical & Analytical skills	Continuous factor variable representing a combination of digital technical skills and analytical skills.
Marketing & strategy skills	Continuous factor variable representing a combination of traditional marketing and strategy skills.
Campaign execution skills	Continuous factor variable representing skills needed for marketing campaign execution.
Social media & CRM skills	Continuous factor variable representing social media and customer relationship management (CRM) skills.
Digital & advertising skills	Continuous factor variable representing digital marketing and advertising skills.
Sales & Communication skills	Continuous factor variable representing soft skills such as communication, presentation, and sales skills.

Source: Authors

**Tab. 3 Descriptive statistics**

	Position	N	Missing	Mean	Median	SD	Minimum	Maximum
Company_size_num	Digital Marketing	58	0	4.7586	5.0000	1.467	1	6
	Marketing	52	0	4.3846	5.0000	1.795	1	6
Agency	Digital Marketing	58	0	0.1379	0.0000	0.348	0	1
	Marketing	52	0	0.0385	0.0000	0.194	0	1
position_type	Digital Marketing	58	0	1.0000	1.0000	0.000	1	1
	Marketing	52	0	0.0000	0.0000	0.000	0	0
workplace_num	Digital Marketing	58	0	0.7414	1.0000	0.637	0	2
	Marketing	52	0	0.7692	1.0000	0.425	0	1
Technical_skills_analytics	Digital Marketing	58	0	1.0559	-0.8494	5.340	-2.25	22.80
	Marketing	52	0	-1.1777	-1.5307	1.031	-2.28	2.37
Marketing_strategy	Digital Marketing	58	0	0.7172	-0.5274	4.219	-2.86	20.58
	Marketing	52	0	-0.7999	-1.0090	1.850	-4.14	3.56
Campaign_Execution_and_Automation	Digital Marketing	58	0	1.0259	-0.2279	3.818	-2.43	15.31
	Marketing	52	0	-1.1443	-1.1110	2.362	-6.81	5.87
Social_media_CRM	Digital Marketing	58	0	0.2745	-0.0645	2.363	-3.49	7.43
	Marketing	52	0	-0.3062	-1.4827	3.897	-4.21	12.78
Digital_Advertising	Digital Marketing	58	0	-0.9047	-1.0392	2.906	-6.84	8.73
	Marketing	52	0	1.0091	0.7581	3.118	-3.56	11.01
Sales_Communication	Digital Marketing	58	0	-0.7254	-1.1713	3.103	-7.90	7.95
	Marketing	52	0	0.8090	0.9400	2.663	-5.14	8.38

Source: Authors

Predictor variables were selected as follows:

- **Agency:** binary variable representing whether the position requires working and coordinating with external agencies and vendors (1 - yes, 0 - no). This variable aims to identify if working with agencies is more relevant for digital marketing or traditional marketing roles.
- **Company Size:** an ordinal variable representing the size of the company posting the job advertisement, categorized as follows: 1: 11-50 employees, 2: 51-200 employees, 3: 501-1,000 employees, 4: 1,001-5,000 employees, 5: 5,001-10,000 employees, 6: 10,001 or more employees. This variable is included as a predictor to understand if company size affects the likelihood of a position being assigned to either digital or traditional marketing.
- **Workplace:** a nominal variable indicating the work arrangement for the advertised position: 0 - Remote, 1 - On-site, 2 - Hybrid.
- **Competency Continuous Factor Variables:** these variables represent different skills and competencies of digital and traditional marketing functions derived from PCA.

To test the developed framework and hypothesis, the authors employed binomial logistic regression. This statistical method is specifically designed to analyze the relationship between a binary dependent variable (the likelihood of a position being assigned to either a digital or traditional marketing) and multiple predictor variables. The binomial logistic regression equation used for predicting the log odds of position being assigned to digital marketing is:

$$\begin{aligned}
 \text{Log Odds (Position type)} = & \beta_0 + \beta_1 * \text{Technical\_skills\_analytics} + \beta_2 * \\
 & \text{Marketing\_strategy} + \beta_3 * \text{Campaign\_Execution\_and\_Automation} + \beta_4 * \\
 & \text{Social\_media\_CRM} + \beta_5 * \text{Digital\_Advertising} + \beta_6 * \text{Sales\_Communication} + \beta_7 * \\
 & \text{Agency} + \beta_8 * \text{workplace\_num} + \beta_9 * \text{Company\_size\_num} + \varepsilon
 \end{aligned}
 \tag{1}$$

Where:  $\beta_0$  represents the intercept, indicating the log odds of position being assigned to digital marketing compared to a traditional marketing when all predictor variables are zero.

$\beta_1$  to  $\beta_9$  are the coefficients associated with each predictor variable, indicating the effect size and direction of the variable on the log odds.

$\epsilon$  represents the error term, accounting for unexplained variability or random error in the relationship between the predictor variables and the log odds.

Additionally, the authors used the following equation to convert the log odds obtained from the logistic regression model into a more interpretable probability of position being assigned to a digital marketing compared to a traditional marketing:

$$\text{Probability (Position type)} = \exp(\text{Log Odds}) / (1 + \exp(\text{Log Odds})) \quad (2)$$

### 3 RESULTS AND DISCUSSION

#### 3.1 Assumptions Check and Model Fit

As a first step, the authors checked whether the assumptions for binomial logistic regression were met, specifically the results of collinearity statistics. The variance inflation factor (VIF) values range from 1.30 to 2.03, while tolerance values range between 49% and 77%, indicating no evidence of severe multicollinearity among the variables.

The proposed binomial logistic regression model demonstrated a good fit to the data. The overall model test yielded a highly significant result with a p-value of  $< .001$  (see Tab. 4), indicating a significant relationship between the predictor variables and the dependent variable. The  $R^2_{McF}$  value for the model is 0.442, suggesting that the predictor variables explain approximately 44.2% of the variance in the likelihood of position being assigned to digital marketing versus a traditional marketing. Additionally, McFadden's  $R^2$  was 0.672, indicating a moderate strength of association.

**Tab. 4 Model Fit Measures**

Model	Deviance	AIC	BIC	$R^2_{McF}$	Overall Model Test		
					$\chi^2$	df	p
1	85.0	105	132	0.442	67.2	9	$< .001$

Source: Authors

In terms of predictability, the model correctly predicted 82.8% of the cases for the "Digital Marketing" position and 82.7% for the "Marketing" (see Tab. 5). The cut-off value for classification was set at 0.56. The predictive measures showed an accuracy of 0.827, specificity of 0.828, sensitivity of 0.827, and an area under the curve (AUC) of 0.908. These results suggest that the model has a good overall predictive performance in distinguishing between the "Digital Marketing" and "Traditional Marketing" roles. The sensitivity and specificity values indicate the model's ability to correctly classify instances of each position type.

**Tab. 5. Classification Table**

Observed	Predicted		% Correct
	Digital Marketing	Marketing	
Digital Marketing	48	10	82.8
Marketing	9	43	82.7

Source: Authors

Finally, the omnibus likelihood ratio test was performed to evaluate the significance of each predictor variable in the model. The results revealed that almost all variables were significantly related to the likelihood of a position being assigned to either digital or traditional marketing. Specifically, the following predictors demonstrated significant relationships with the outcome variable at 5% significance level: Technical & analytical skills ( $\chi^2 = 6.18, p = 0.013$ ), Marketing strategy ( $\chi^2 = 5.83, p = 0.016$ ), Campaign execution skills ( $\chi^2 = 4.42, p = 0.036$ ), Social Media & CRM skills ( $\chi^2 = 8.26, p = 0.004$ ), Digital & advertising skills ( $\chi^2 = 6.84, p = 0.009$ ), Sales & Communication skills ( $\chi^2 = 19.56, p < 0.001$ ), Agency ( $\chi^2 = 5.49, p = 0.019$ ). However, Workplace and Company Size variables were found not significant as their p-values are higher than the 5% significance level (0.17 and 0.132 respectively). In conclusion, the binomial logistic regression model exhibited a significant relationship between the predictor variables and the likelihood of a position being assigned to either a digital or traditional marketing. The model demonstrated a good fit to the data, explaining 44.2% of the variance in position type. The classification table and predictive measures indicated strong predictability, with an overall accuracy of 82%.

### 3.2 Model-Specific Results

The model coefficients in Tab. 6 provide estimates of the log odds of being in the "Digital Marketing" position versus the "Marketing" role. Upon examining the model coefficients, the intercept represents the log odds of position type being digital marketing compared to traditional marketing when all predictors are zero. The odds ratio for the intercept is 0.749, suggesting that the odds of being in the "Digital Marketing" position are 0.749 times higher than being in the "Traditional Marketing" position when all predictors are zero. However, it is not statistically significant ( $p = 0.714$ ), indicating that it does not significantly contribute to the prediction.

Among the specific skills, the predictor variables "Social Media & CRM Skills" ( $p = 0.006$ ) and "Sales & Communication Skills" ( $p < 0.001$ ) show a statistically significant relationship with the position type (Digital Marketing vs Traditional Marketing role), while the "Marketing Strategy Skills" variable is on the edge ( $p < 0.056$ ).

The negative coefficient for "Sales & Communication Skills" suggests that an increase in this skill is associated with a decrease in the log odds of being in a digital marketing position compared to a traditional marketing position. On the other hand, the positive coefficient for "Social Media & CRM Skills" indicates that an increase in these skills is associated with an increase in the log odds of being in a digital marketing position compared to a traditional position. The positive coefficient for "Marketing Strategy Skills" suggests that an increase in this skill is associated with an increase in the log odds of being in a digital marketing position. The other skills, such as "Technical & Analytical Skills," "Campaign Execution Skills," and

"Digital & Advertising Skills," also show some associations with the position type, but they were not found statistically significant ( $p > 0.05$ ).

**Tab. 6 Model Coefficients – log odds of "Position type = Digital Marketing"**

Predictor	Estimate	SE	Z	p	Odds ratio	95% Confidence Interval	
						Lower	Upper
Intercept	-0.289	0.790	-0.366	0.714	0.749	0.159	3.523
Technical_skills_analytics	0.518	0.283	1.833	0.067	1.679	0.965	2.921
Marketing_strategy	0.410	0.215	1.912	0.056	1.508	0.990	2.296
Campaign_Execution_and_Automation	0.288	0.164	1.758	0.079	1.333	0.967	1.837
Social_media_CRM	0.279	0.101	2.757	0.006	1.322	1.084	1.612
Digital_Advertising	-0.258	0.105	-2.447	0.014	0.773	0.629	0.950
Sales_Communication	-0.511	0.154	-3.319	< .001	0.600	0.444	0.811
Agency	2.166	1.004	2.157	0.031	8.726	1.219	62.474
workplace_num	-0.858	0.632	-1.358	0.174	0.424	0.123	1.463
Company_size_num	0.295	0.201	1.470	0.142	1.343	0.906	1.991

Note. Estimates represent the log odds of "Position = Digital Marketing" vs. "Position = Marketing"

Source: Authors

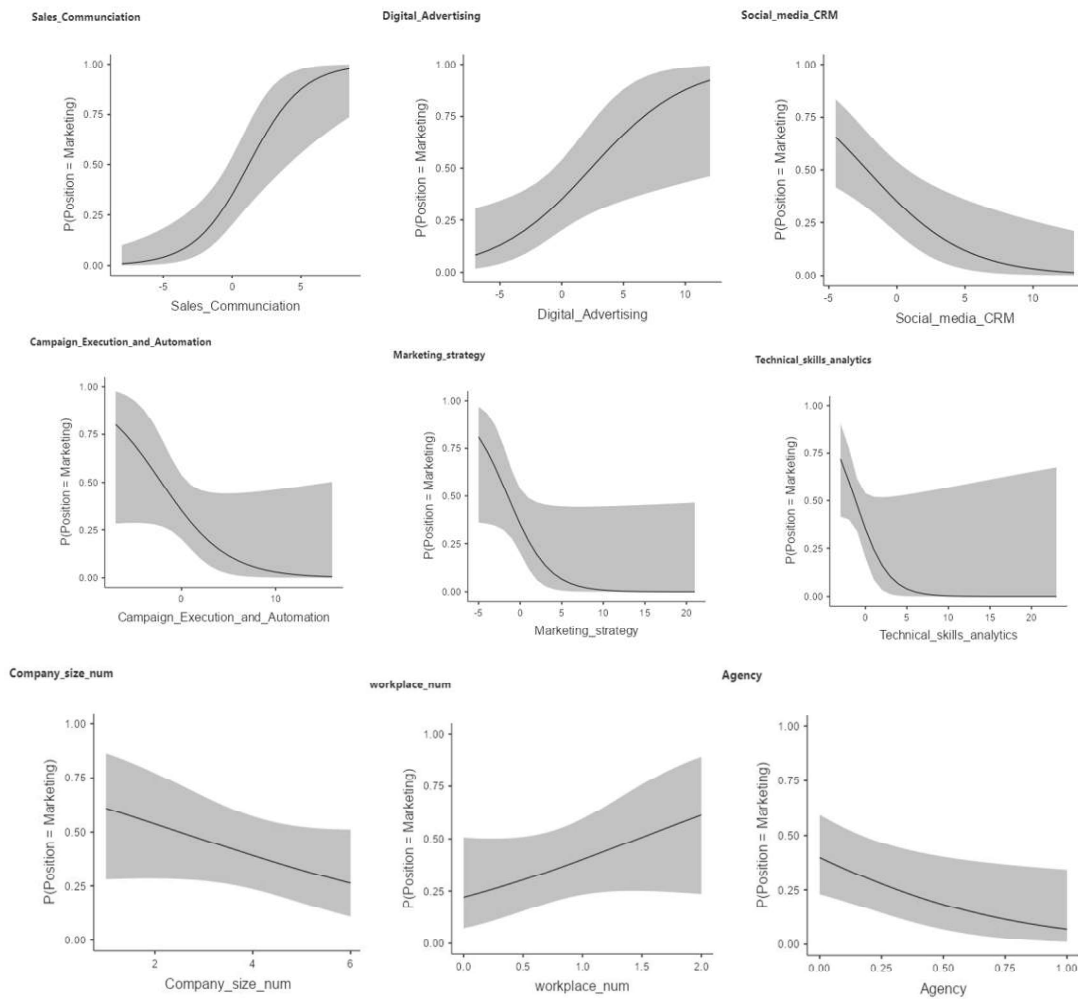
Based on these results we can partially support H1 "There is a relationship between specific competencies (Technical & Analytical Skills, Marketing & Strategy Skills, Campaign Execution Skills, Social Media & CRM Skills, Digital & Advertising Skills, Sales & Communication Skills) and the likelihood of a position being assigned to either a digital or traditional marketing" as the results indicate significant relationship between Social Media & CRM, Sales & Communication and Marketing & Strategy skills and the position type. Specifically, an increase in Marketing & Strategy skills, Social Media & CRM skills was associated with higher odds of position being assigned to digital marketing compared to the traditional marketing. On the other hand, an increase in Sales & Communication skills was associated with lower odds of being assigned to digital marketing position.

The variable "Agency" has a statistically significant relationship with the position type ( $p = 0.031$ ). The positive coefficient (2.166) suggests that the presence of cooperation with an agency in the job description is associated with an increase in the log odds of position being assigned to digital marketing compared to traditional marketing. The results support the H4 "There is a relationship between working with an agency and the likelihood of a position being assigned to either a digital or traditional marketing" as the predictor variable "Agency" showed a statistically significant relationship with the outcome variable.

The remaining variables "Workplace" and "Company Size" were found not statistically significant ( $p$ -values 0.174 and 0.142 respectively) These results did not provide significant evidence to support hypotheses H2 "There is a relationship between company size and the likelihood of a position being assigned to either a digital or traditional marketing" and H3 "There is a relationship between the type of workplace (on-site, remote, hybrid) and the likelihood of a position being assigned to either a digital or traditional marketing"

In Fig. 2 the authors present estimated marginal means charts illustrating the average predicted probabilities (odds) of the likelihood of a position being assigned to either a digital or traditional marketing for each variable in the logistic regression model.

**Fig. 2. Estimated Marginal Means – Competencies**



Source: Authors

### 3.3 Discussion

The findings of the binominal regression model partially supported **H1**, indicating that specific competencies are associated with the likelihood of a position being assigned to either a digital or traditional marketing. Such an outcomes demonstrated that digital marketing and traditional marketing require different competencies. Notably, **Social Media & CRM skills** were found to be associated with digital marketing roles, aligning with previous research highlighting the importance of expertise in digital marketing tools. On the other hand, **Sales & Communication skills** were associated with traditional marketing roles, which represent that some traditional marketing functions as trade marketing are considered as half sales and half marketing role – and often require negotiation and sales skills in discussions with customers about in-store executions. Communication is considered as a core competency for Brand managers to coordinate the brand activities within and outside the organization. Additionally, although **Marketing & Strategy skills** showed a marginal level of significance, they were more strongly associated with digital marketing roles, potentially due to job descriptions commonly requiring digital marketing managers to possess at least basic marketing and strategy knowledge. This result supports previous research (Langan et al., 2019; Reavey et al., 2021; Key et al., 2019) that suggests digital marketing requires unique competencies

compared to traditional marketing, while potentially rejecting the idea of Zahay & Roberts (2017) that digital marketing is complementary to marketing discipline.

Regarding the hypotheses related to company/position aspects, only **H4** received support, indicating that working with an agency significantly distinguishes between digital marketing and traditional marketing roles. This finding is consistent with the previous study by Key et al. (2019), which highlighted the frequent requirement for digital marketers to work with and coordinate external agencies. However, **H2** and **H3** did not receive support, suggesting that company size and workplace type do not significantly influence the likelihood of a position being assigned to either digital or traditional marketing.

This research addresses several limitations present in previous studies by incorporating a wide range of data from various job descriptions, considering industry aspects specific to different digital and traditional marketing roles, and exploring company and position aspects. Additionally, it provides a comprehensive list of unique skills identified through job description analysis. Moreover, this research is the first to quantitatively demonstrate significant differences between the competencies required for digital marketing and traditional marketing roles. However, several limitations should be acknowledged. Firstly, limited sample size – 109 observations from the Czech Republic. Second, there is a possibility of missed skills - with more observations, more unique skills could be identified. Third, the inclusion of additional predictor variables could enhance the exploration of differences between digital marketing and traditional marketing roles. Fourth, limitation of applying standard PCA to binary variables, primarily tailored for continuous data, prompts the authors to pursue further research utilizing polychoric PCA to achieve more precise results in their investigation (Aletras et al., 2010; Holgado-Tello et al., 2010). Lastly, it is important to consider the seniority factor of different positions, as the skills required may vary depending on the seniority level. The results obtained from the research can be generalizable only for the Czech Republic, however, it will still need more observations to match the targeted population. In forthcoming research, the authors intend to gather a larger number of job descriptions from various countries to enhance the generalizability of the results.

## CONCLUSION

In conclusion, this paper investigated the competencies required for digital marketing and traditional marketing positions using a binomial logistic regression model. The findings have both practical and theoretical implications. The study highlights the distinct competencies needed for digital marketing and traditional marketing roles, emphasizing the importance of specialized skills in the digital landscape. This has implications for organizations in terms of recruitment, training, and talent development. Understanding the specific competencies associated with each role can inform hiring strategies, competency frameworks, and career development paths. It provides valuable insights into the skills that digital marketers should possess and enables companies to align their talent management practices accordingly.

Furthermore, the findings contribute to the existing body of knowledge in digital marketing research. They support previous studies that suggest digital marketing requires unique competencies compared to traditional marketing, challenging the notion of digital marketing being merely complementary to the broader marketing discipline. This highlights the need for specialized skills in digital marketing and provides a foundation for future research.

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