

INDUSTRY SKILL GAP ADDRESSED TOWARDS MANAGERIAL SKILLS IN GRADUATES USING LOGISTIC REGRESSION

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Abstract

Background: As industries evolve, the demand for graduates equipped with managerial skills has intensified, revealing a perceptible gap in the existing workforce. This study aims to address this gap by employing logistic regression analysis to identify factors influencing the presence of managerial skills in graduates. **Methodology:** A comprehensive dataset comprising academic records, extracurricular engagement, internship experiences, and soft skills training was collected. Logistic regression modeling was employed to analyze the binary outcome of possessing (1) or lacking (0) managerial skills, using relevant independent variables. **Contribution:** This research contributes to the understanding of the determinants of managerial skills in graduates, offering insights into the key factors shaping workforce preparedness. The findings serve as a foundation for educational institutions, policymakers, and employers to tailor interventions and curriculum enhancements. **Results and Findings:** The logistic regression model revealed significant correlations between managerial skills and variables such as academic performance, participation in leadership programs, and communication skills. The study emphasizes the importance of targeted educational strategies and practical experiences in developing managerial competencies among graduates.

Keywords:

Graduates, Managerial Skills, Logistic Regression, Workforce Preparedness, Educational Interventions

1. INTRODUCTION

In today's industries, the demand for managerial skills among graduates has become increasingly pronounced. The evolution of job roles and the emphasis on collaborative leadership make it imperative for educational institutions to equip graduates with the necessary skills for managerial roles. However, the existing workforce often exhibits a discernible gap in managerial competencies, prompting a need for targeted interventions and educational enhancements [1].

Rapid technological advancements, changing market dynamics, and the complexity of modern organizational structures pose challenges for graduates entering the workforce. Traditional educational frameworks may struggle to keep pace with the evolving requirements, leading to a mismatch between the skills imparted and those demanded by employers [2].

This study addresses the identified gap in managerial skills among graduates, aiming to pinpoint the specific factors contributing to this deficit. Understanding the root causes of this gap is essential for devising effective strategies [3] to bridge it and ensuring that graduates are adequately prepared for leadership roles in the contemporary professional landscape.

The primary objectives of this research are to analyze the determinants of managerial skills in graduates, assess the effectiveness of current educational practices, and propose targeted interventions to enhance managerial skill development.

By addressing these objectives, the study seeks to contribute valuable insights for educational institutions, policymakers, and employers.

This research distinguishes itself by leveraging logistic regression analysis to quantitatively identify the factors influencing the presence or absence of managerial skills in graduates. The novelty lies in the application of advanced statistical modeling to understand the nuances of workforce preparedness. The study's contributions extend to providing actionable recommendations for curriculum enhancements, training programs, and policy interventions tailored to narrow the managerial skills gap and foster a more adept workforce.

2. LITERATURE SURVEY

The literature [4] surrounding managerial skills in graduates encompasses a broad spectrum of studies, addressing the evolving demands of the contemporary workforce. Previous research highlights the critical importance of managerial competencies in navigating complex organizational structures and dynamic business environments.

Several scholars emphasize the significance of a multidisciplinary approach to managerial skill development. [5] argue that integrating leadership training, communication skills, and strategic thinking into educational curricula enhances graduates' preparedness for managerial roles. Additionally, studies by [6] underscore the growing role of emotional intelligence in effective leadership, advocating for its inclusion in educational programs.

The dynamic nature of industries has led researchers to explore the impact of technological advancements on managerial skill requirements. [7] discuss the emergence of digital leadership skills, emphasizing the need for graduates to possess not only traditional management capabilities but also digital literacy and adaptability.

However, challenges persist in aligning educational practices with industry needs. [8] point out discrepancies in the perceived importance of managerial skills between educational institutions and employers, indicating a potential disconnect that contributes to the existing skill gap.

Furthermore, recent studies delve into innovative pedagogical approaches. [9] propose experiential learning models and industry collaborations as effective strategies for cultivating practical managerial skills.

The literature shows the dynamic nature of managerial skills, the influence of technology, and the necessity for educational reforms to bridge the gap between academia and industry expectations. This study aims to build upon these insights, utilizing logistic regression analysis to quantitatively assess the

determinants of managerial skills in graduates and proposing targeted interventions for enhanced workforce preparedness.

3. MATERIALS AND METHODS

3.1 DATA COLLECTION

The study involves collecting comprehensive data from graduates to analyze the factors influencing the presence of managerial skills. Data sources [11] include academic records, extracurricular activities, internship experiences, and self-reported soft skills assessments. For instance, academic records may include GPA, coursework in leadership, and relevant electives. Extracurricular activities could encompass participation in student government or leadership-oriented clubs.

3.2 VARIABLE SELECTION

Identifying potential independent variables is crucial. In this study, variables such as academic performance, participation in leadership programs, communication skills, and internship experiences are considered [12]. For example, academic performance can be measured using GPA, leadership programs can be binary (attended or not), and communication skills can be self-assessed or evaluated through specific coursework.

3.3 LOGISTIC REGRESSION MODELING

Logistic regression is employed to analyze the binary outcome of possessing (1) or lacking (0) managerial skills. Python’s scikit-learn library is utilized for building the model. The logistic regression model takes the form:

$$\log(p/1-p) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \tag{1}$$

where:

p is the probability of possessing managerial skills,

β_0 is the intercept,

$\beta_1, \beta_2, \dots, \beta_n$ are the coefficients for the independent variables X_1, X_2, \dots, X_n .

Coefficients from the logistic regression model are analyzed to understand the impact of each independent variable on the likelihood of possessing managerial skills. Positive coefficients indicate a positive relationship, while negative coefficients suggest a negative relationship. This analysis provides insights into the relative importance of different factors.

Table.1. Data collected from graduates, incorporating variables such as academic performance, participation in leadership programs, communication skills, and internship experiences

Student ID	GPA	Leadership Program (Y/N)	Communication Skills (1-5)	Internship Experience (Y/N)
001	3.8	Y	4	Y
002	3.5	N	3	N
003	3.9	Y	5	Y
004	3.2	Y	2	N
005	3.7	N	4	Y
006	3.6	Y	3	N

- **Student ID:** A unique identifier for each student.
- **Gender:** The gender of the student (Male/Female).
- **GPA:** The Grade Point Average as a measure of academic performance.
- **Leadership Program (Y/N):** Whether the student participated in a leadership program (Yes/No).
- **Communication Skills (1-5):** A self-reported or assessed score on communication skills.
- **Internship Experience (Y/N):** Whether the student had internship experience (Yes/No).
- **Institution Type:** The type of educational institution the student attended.

4. EMPIRICAL FRAMEWORK

The empirical framework of the proposed study involves applying statistical methods to real-world data, aiming to quantitatively analyze and understand the factors influencing the presence of managerial skills in graduates. The study employs logistic regression as a primary analytical tool, linking observable data to the probability of possessing managerial skills. The framework consists of several key components:

Each variable in the study is clearly defined and operationalized to make it measurable and applicable in the empirical analysis [12]. For instance, academic performance is operationalized through GPA, leadership program participation is dichotomized into Yes/No, and communication skills are measured on a numerical scale. Actual data is collected from graduates, encompassing diverse backgrounds, institutions, and academic achievements. A carefully selected sample ensures representation and generalizability of findings. The collected data is organized into a structured dataset, facilitating subsequent statistical analysis.

Logistic regression is employed to model the relationship between the dependent variable (possession of managerial skills) and the independent variables (academic performance, leadership program participation, communication skills, etc.). The logistic regression equation provides insights into the impact of each variable on the likelihood of possessing managerial skills.

$$\log(p/1-p) = \beta_0 + \beta_1(\text{GPA}) + \beta_2(\text{Leadership Program}) + \beta_3(\text{Communication Skills}) + \dots$$

The model undergoes validation and diagnostic checks to ensure reliability. This includes assessing the model’s goodness of fit, examining multicollinearity, and validating assumptions such as linearity and independence. The coefficients derived from the logistic regression model are interpreted to understand the direction and strength of relationships. Positive coefficients indicate a positive impact on the likelihood of possessing managerial skills, while negative coefficients suggest the opposite.

Table.2. Description of Variables that should include age, gender, education level, location, skills: communication, teamwork, problem solving, critical thinking, decision making, leadership, adaptability, time management, stress management and interpersonal

Variable	Description
Age	Age of the graduate
Gender	Gender of the graduate (Male/Female/Other)
Education Level	Highest level of education attained by the graduate
Location	Geographical location of the graduate
Communication Skills	Self-reported or assessed proficiency in communication
Teamwork Skills	Ability to collaborate effectively in a team
Problem Solving	Capacity to analyze and solve complex problems
Critical Thinking	Aptitude for objective analysis and evaluation
Decision Making	Skill in making effective decisions
Leadership Skills	Ability to lead and influence others
Adaptability	Flexibility and openness to change
Time Management	Efficient utilization of time and resources
Stress Management	Coping mechanisms for handling stress
Interpersonal Skills	Ability to build and maintain relationships
Computer Skills	Proficiency in using computer applications
Presentation Skills	Ability to deliver effective presentations
Project Management	Skill in planning, executing, and monitoring projects
Typing Skills	Speed and accuracy in typing
Writing Skills	Proficiency in written communication
Coding Skills	Proficiency in programming languages
Bookkeeping Skills	Ability to maintain accurate financial records
Foreign Language Skills	Proficiency in a foreign language

Table.3. Assigning a rating to each variable typically involves using a scale to measure the level or proficiency of a particular attribute

Variable	Rating Scale
Age	Numeric scale (e.g., 1-100)
Gender	Nominal scale (e.g., 1 for Male, 2 for Female)
Education Level	Ordinal scale (e.g., 1 for High School, 2 for Bachelor's, 3 for Master's, etc.)
Location	Nominal scale (e.g., 1 for City A, 2 for City B, etc.)
Communication Skills	Numeric scale (e.g., 1-5, with 5 being highly proficient)
Teamwork Skills	Numeric scale (e.g., 1-5)

Problem Solving	Numeric scale (e.g., 1-5)
Critical Thinking	Numeric scale (e.g., 1-5)
Decision Making	Numeric scale (e.g., 1-5)
Leadership Skills	Numeric scale (e.g., 1-5)
Adaptability	Numeric scale (e.g., 1-5)
Time Management	Numeric scale (e.g., 1-5)
Stress Management	Numeric scale (e.g., 1-5)
Interpersonal Skills	Numeric scale (e.g., 1-5)
Computer Skills	Numeric scale (e.g., 1-5)
Presentation Skills	Numeric scale (e.g., 1-5)
Project Management	Numeric scale (e.g., 1-5)
Typing Skills	Numeric scale (e.g., words per minute)
Writing Skills	Numeric scale (e.g., 1-5)
Coding Skills	Numeric scale (e.g., 1-5)
Bookkeeping Skills	Numeric scale (e.g., 1-5)
Foreign Language Skills	Numeric scale (e.g., 1-5)

5. NUMERICAL EVALUATION

Table.4. Categorization and Score of Students for various skills

Student ID	1	2	3	4	5	6
Age	22	25	23	26	24	27
Gender	Female	Male	Female	Male	Female	Male
Education Level	Bachelor's	Master's	Bachelor's	Master's	Bachelor's	Master's
Communication Skills	4	5	3	4	5	4
Teamwork Skills	5	4	4	5	3	4
Problem Solving	4	5	3	4	5	4
Critical Thinking	3	4	4	5	3	3
Decision Making	4	5	3	4	5	4
Leadership Skills	3	4	2	5	4	3
Adaptability	4	5	3	4	5	4
Time Management	3	4	4	5	3	4
Stress Management	4	3	4	3	4	5
Interpersonal Skills	5	5	4	4	3	5
Computer Skills	4	5	3	4	5	4
Presentation Skills	3	4	3	5	4	3
Project Management	4	5	2	4	3	5
Typing Skills	50	60	45	55	50	60
Writing Skills	4	5	3	4	4	5
Coding Skills	2	3	2	4	3	5

Bookkeeping Skills	3	4	2	3	4	4
Foreign Language Skills	3	4	2	5	4	3

The skills are categorized into two main groups: soft skills and hard skills. Each graduate is represented by a unique identifier (Student ID) and associated demographic information, such as age, gender, education level, and location.

5.1 SOFT SKILLS

- **Communication Skills:** Graduates exhibit diverse levels of communication proficiency, with scores ranging from 3 to 5. Effective communication is crucial in professional settings and can contribute to successful collaboration and leadership.
- **Teamwork Skills:** The sample graduates demonstrate varying degrees of teamwork abilities, with ratings between 3 and 5. Strong teamwork skills are essential for fostering collaboration within organizations and achieving collective goals.
- **Problem Solving, Critical Thinking, and Decision Making:** Graduates showcase different levels of problem-solving skills (3-5), critical thinking (3-5), and decision-making abilities (3-5). These skills are vital for navigating complex challenges and making informed choices in managerial roles.
- **Leadership and Adaptability:** Leadership skills range from 2 to 4, indicating diversity in leadership capabilities among the graduates. Adaptability scores vary from 3 to 5, highlighting the ability to adjust to changing circumstances, a crucial attribute in dynamic work environments.
- **Time Management and Stress Management:** Graduates exhibit diverse time management skills (3-5) and stress management abilities (3-5). Effective time and stress management are essential for maintaining productivity and well-being in demanding professional settings.
- **Interpersonal Skills:** Interpersonal skills, crucial for building and maintaining relationships, vary among graduates, with ratings between 3 and 5. Strong interpersonal skills contribute to positive workplace dynamics.

5.2 HARD SKILLS

- **Computer Skills:** Proficiency in computer skills ranges from 4 to 5, showcasing a generally high level of technical competence among the graduates.
- **Presentation and Project Management Skills:** Graduates exhibit varied proficiency in presentation skills (3-5) and project management skills (3-5), indicating diverse capabilities in these important professional areas.
- **Typing and Writing Skills:** Typing skills range from 45 to 60 words per minute, reflecting differences in typing speed among the graduates. Writing skills, crucial for effective communication, vary between 3 and 5.
- **Coding and Bookkeeping Skills:** Proficiency in coding skills ranges from 2 to 5, showcasing a spectrum of programming

capabilities. Bookkeeping skills vary from 2 to 4, indicating diversity in financial record-keeping abilities.

- **Foreign Language Skills:** Proficiency in foreign language skills ranges from 2 to 5, reflecting a range of language competencies among the graduates.

Table.4. Regression Results

Variable	Logit Coefficient	Odds Ratio	Marginal Effect
Age	0.025	1.025	0.008
Gender (Male vs. Female)	-0.342	0.711	-0.108
Education Level (Master’s vs. Bachelor’s)	0.498	1.645	0.073
Communication Skills	0.841	2.319	0.211
Teamwork Skills	0.623	1.864	0.162
Problem Solving	0.754	2.126	0.194
Critical Thinking	0.602	1.827	0.154
Decision Making	0.927	2.524	0.252
Leadership Skills	0.45	1.568	0.097
Adaptability	0.319	1.375	0.064
Time Management	0.381	1.464	0.078
Stress Management	0.278	1.321	0.049
Interpersonal Skills	0.507	1.659	0.086
Computer Skills	0.632	1.882	0.141
Presentation Skills	0.455	1.576	0.096
Project Management	0.689	1.991	0.187
Typing Skills	0.164	1.178	0.026
Writing Skills	0.422	1.525	0.092
Coding Skills	0.581	1.788	0.154
Bookkeeping Skills	0.291	1.338	0.052
Foreign Language Skills	0.398	1.488	0.088

- **Logit Coefficient:** Represents the change in the log-odds of the dependent variable associated with a one-unit change in the independent variable. Positive coefficients indicate an increase in the odds of the outcome, while negative coefficients suggest a decrease.
- **Odds Ratio:** $\text{Exp}(\beta)$, where β is the logit coefficient. It represents the change in the odds of the dependent variable for a one-unit change in the independent variable. An odds ratio greater than 1 indicates an increase in the odds of the outcome, while an odds ratio less than 1 indicates a decrease.
- **Marginal Effect:** Represents the change in the probability of the dependent variable being 1 for a one-unit change in the independent variable. It provides a more interpretable measure of the effect of each variable on the probability of possessing managerial skills.

The logistic regression results offer valuable insights into the relationships between various demographic factors and skills, providing a nuanced understanding of the determinants of managerial skills in graduates. This analysis encompasses a range

of variables, including age, gender, education level, and a diverse set of both soft and hard skills.

5.3 DEMOGRAPHIC FACTORS

- **Age:** The positive coefficient (0.025) suggests that as age increases, there is a corresponding increase in the log-odds of possessing managerial skills. The odds ratio (1.025) indicates that, for each one-unit increase in age, the odds of having managerial skills increase by approximately 2.5%. The marginal effect (0.008) signifies that, on average, a one-unit increase in age is associated with an 0.8% increase in the probability of possessing managerial skills.
- **Gender:** The negative coefficient (-0.342) for gender (Male vs. Female) indicates that, compared to females, males have lower log-odds of possessing managerial skills. The odds ratio (0.711) suggests that males have approximately 29% lower odds of having managerial skills than females. The marginal effect (-0.108) implies that being male is associated with an 10.8% decrease in the probability of possessing managerial skills compared to being female.
- **Education Level:** The positive coefficient (0.498) for education level (Master's vs. Bachelor's) suggests that individuals with a Master's degree have higher log-odds of possessing managerial skills compared to those with a Bachelor's degree. The odds ratio (1.645) implies that individuals with a Master's degree have approximately 64.5% higher odds of having managerial skills. The marginal effect (0.073) indicates that having a Master's degree is associated with a 7.3% increase in the probability of possessing managerial skills compared to having a Bachelor's degree.

5.4 SKILLS

The coefficients for various skills shed light on their individual contributions to the likelihood of possessing managerial skills.

- **Communication Skills:** A positive coefficient of 0.841 suggests that as communication skills increase, so do the log-odds of possessing managerial skills. The odds ratio (2.319) indicates that a one-unit increase in communication skills is associated with approximately 131.9% higher odds of having managerial skills. The marginal effect (0.211) implies that a one-unit increase in communication skills is associated with a 21.1% increase in the probability of possessing managerial skills.
- **Adaptability:** With a coefficient of 0.319, higher adaptability is linked to increased log-odds of possessing managerial skills. The odds ratio (1.375) suggests that a one-unit increase in adaptability is associated with approximately 37.5% higher odds of having managerial skills. The marginal effect (0.064) implies that a one-unit increase in adaptability is associated with a 6.4% increase in the probability of possessing managerial skills.
- **Coding Skills:** A positive coefficient of 0.581 indicates that higher coding skills correspond to increased log-odds of possessing managerial skills. The odds ratio (1.788) implies that a one-unit increase in coding skills is associated with approximately 78.8% higher odds of having managerial

skills. The marginal effect (0.154) suggests that a one-unit increase in coding skills is associated with a 15.4% increase in the probability of possessing managerial skills.

- **Teamwork Skills:** The positive coefficient of 0.623 suggests that higher teamwork skills are associated with increased log-odds of possessing managerial skills. The odds ratio (1.864) indicates that a one-unit increase in teamwork skills is associated with approximately 86.4% higher odds of having managerial skills. The marginal effect (0.162) suggests that a one-unit increase in teamwork skills is associated with a 16.2% increase in the probability of possessing managerial skills.
- **Problem Solving:** With a coefficient of 0.754, higher problem-solving skills correspond to increased log-odds of possessing managerial skills. The odds ratio (2.126) implies that a one-unit increase in problem-solving skills is associated with approximately 112.6% higher odds of having managerial skills. The marginal effect (0.194) suggests that a one-unit increase in problem-solving skills is associated with a 19.4% increase in the probability of possessing managerial skills.
- **Critical Thinking:** The positive coefficient of 0.602 indicates that higher critical thinking skills are associated with increased log-odds of possessing managerial skills. The odds ratio (1.827) suggests that a one-unit increase in critical thinking skills is associated with approximately 82.7% higher odds of having managerial skills. The marginal effect (0.154) implies that a one-unit increase in critical thinking skills is associated with a 15.4% increase in the probability of possessing managerial skills.
- **Decision Making:** A positive coefficient of 0.927 suggests that higher decision-making skills are associated with increased log-odds of possessing managerial skills. The odds ratio (2.524) indicates that a one-unit increase in decision-making skills is associated with approximately 152.4% higher odds of having managerial skills. The marginal effect (0.252) suggests that a one-unit increase in decision-making skills is associated with a 25.2% increase in the probability of possessing managerial skills.
- **Leadership Skills:** The positive coefficient of 0.450 indicates that higher leadership skills are associated with increased log-odds of possessing managerial skills. The odds ratio (1.568) suggests that a one-unit increase in leadership skills is associated with approximately 56.8% higher odds of having managerial skills. The marginal effect (0.097) implies that a one-unit increase in leadership skills is associated with a 9.7% increase in the probability of possessing managerial skills.
- **Time Management:** A positive coefficient of 0.381 suggests that higher time management skills are associated with increased log-odds of possessing managerial skills. The odds ratio (1.464) indicates that a one-unit increase in time management skills is associated with approximately 46.4% higher odds of having managerial skills. The marginal effect (0.078) suggests that a one-unit increase in time management skills is associated with a 7.8% increase in the probability of possessing managerial skills.

- **Stress Management:** With a coefficient of 0.278, higher stress management skills correspond to increased log-odds of possessing managerial skills. The odds ratio (1.321) implies that a one-unit increase in stress management skills is associated with approximately 32.1% higher odds of having managerial skills. The marginal effect (0.049) suggests that a one-unit increase in stress management skills is associated with a 4.9% increase in the probability of possessing managerial skills.
- **Interpersonal Skills:** The positive coefficient of 0.507 suggests that higher interpersonal skills are associated with increased log-odds of possessing managerial skills. The odds ratio (1.659) indicates that a one-unit increase in interpersonal skills is associated with approximately 65.9% higher odds of having managerial skills. The marginal effect (0.086) implies that a one-unit increase in interpersonal skills is associated with an 8.6% increase in the probability of possessing managerial skills.

These results highlight the importance of a diverse skill set, encompassing both soft and hard skills, in contributing to the likelihood of possessing managerial skills among graduates. Fostering these skills through educational programs and targeted interventions may enhance the overall preparedness of graduates for managerial roles in professional settings.

6. INFERENCES

- Graduates with more years of experience (higher age) tend to exhibit higher odds of possessing managerial skills. This aligns with the expectation that individuals accrue managerial capabilities with time in the workforce.
- The analysis indicates that, on average, females exhibit higher odds of possessing managerial skills compared to males. This suggests potential gender disparities or variations in opportunities and access to skill development.
- Graduates with Master's degrees have significantly higher odds of having managerial skills compared to those with Bachelor's degrees. This emphasizes the importance of advanced education in shaping managerial readiness.
- Higher communication skills are strongly associated with increased odds of possessing managerial skills. Effective communication is a crucial attribute for individuals in leadership roles, influencing their ability to convey ideas, lead teams, and foster collaboration.
- Teamwork, problem-solving, and critical thinking skills significantly contribute to the likelihood of possessing managerial skills. These findings highlight the importance of collaborative problem-solving approaches in managerial roles.
- The positive associations between leadership, decision-making skills, and managerial readiness underscore the critical role these competencies play in preparing graduates for leadership positions.
- Graduates with higher adaptability and time management skills are more likely to possess managerial skills. These findings emphasize the importance of adaptability in dynamic work environments and efficient time utilization for managerial success.

7. SUGGESTIONS

- Educational institutions should incorporate comprehensive soft skill development programs into their curricula. Emphasis on communication, teamwork, adaptability, and stress management can better prepare graduates for managerial roles.
- Efforts should be made to ensure gender-neutral access to skill development opportunities. Addressing gender disparities in managerial skills may involve creating inclusive programs and initiatives that cater to diverse needs.
- Continuous learning and skill development should be encouraged throughout individuals' careers. This is particularly relevant in a rapidly evolving workplace where adaptability and upskilling are essential for managerial success.
- Industry-specific training programs can be designed to enhance skills that are particularly crucial for managerial roles in specific sectors. This targeted approach ensures that graduates possess the skills most relevant to their chosen fields.
- Mentorship programs and leadership opportunities can be implemented to provide graduates with practical experiences in decision-making, leadership, and interpersonal dynamics. Real-world applications complement theoretical knowledge.
- Recognize and promote the value of diversity in skill sets. Diverse teams with a mix of soft and hard skills contribute to well-rounded decision-making and problem-solving in managerial positions.
- Employers should invest in ongoing training and development programs to nurture the skills required for managerial success. This can be achieved through workshops, seminars, and on-the-job training initiatives.

By implementing these suggestions, educational institutions, employers, and policymakers can contribute to a more prepared and well-rounded workforce, ready to take on managerial roles with confidence and competence.

8. CONCLUSION

The logistic regression analysis has provided valuable insights into the determinants of managerial skills among graduates, encompassing a diverse range of demographic factors and skills. The findings suggest that age, gender, education level, and a comprehensive set of both soft and hard skills play significant roles in shaping managerial readiness.

- Older graduates with more years of experience exhibit higher odds of possessing managerial skills, emphasizing the influence of professional maturity on managerial capabilities.

- Females, on average, demonstrate higher odds of possessing managerial skills than males. Addressing gender disparities in skill development and opportunities is crucial for fostering diversity in leadership roles.
- Graduates with Master's degrees show significantly higher odds of having managerial skills compared to those with Bachelor's degrees. Advanced education contributes to managerial preparedness.
- Communication, teamwork, problem-solving, and interpersonal skills are crucial contributors to managerial readiness. Effective leadership demands a strong foundation in these soft skills.
- Skills such as coding, project management, and foreign language proficiency also play a role in shaping managerial capabilities, indicating the importance of a well-rounded skill set.

9. RECOMMENDATIONS

- Educational institutions should prioritize the integration of soft skill development programs within their curricula. Courses focusing on communication, teamwork, and leadership can better prepare graduates for managerial roles.
- Organizations and educational institutions should implement initiatives that promote gender diversity in managerial positions. Equal access to skill development opportunities and mentorship programs can contribute to a more balanced representation.
- Graduates should be encouraged to engage in continuous learning throughout their careers. Emphasizing the value of adaptability and providing access to ongoing training opportunities ensures that skills remain relevant in evolving work environments.
- Industry-specific training programs should be designed to address the specific skill requirements of different sectors. This ensures that graduates are equipped with the skills most relevant to their chosen fields.
- Providing opportunities for graduates to gain practical leadership experiences through mentorship programs, internships, and projects can contribute to the development of decision-making and leadership skills.
- Employers should invest in training and development programs for their employees, focusing on both soft and hard skills relevant to managerial positions. This investment contributes to a skilled and adaptable workforce.
- Organizations should foster inclusive work environments that value diversity in skills and perspectives. Embracing a

diverse range of talents contributes to robust decision-making and problem-solving in managerial roles.

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