

## **Employment Outcomes of Information Systems Graduates: A Correlation Study on Job Search Timing, Income, and Institutional Influence**

**Ghea Sekar Palupi<sup>1</sup>, Choirotus Sa'adah<sup>2</sup>, Ardhini Warih Utami<sup>3</sup>**

<sup>1,2,3,4</sup>Universitas Negeri Surabaya, Indonesia

\* Corresponding email: [gheapalupi@unesa.ac.id](mailto:gheapalupi@unesa.ac.id)

### **ABSTRACT**

This study examines the correlation between various factors—such as age, job waiting time, and initial salary—among alumni of the Information Systems program at the State University of Surabaya (UNESA) who graduated between 2022 and 2024. By analysing alumni tracer data, this research aims to uncover how these variables influence early career success and progression, offering insights into the factors that shape graduates' job market experiences. Key areas of focus include the relationship between alumni age and job search duration, the impact of job waiting time on starting salary, and how continuous skill development contributes to career advancement. Additionally, the study explores how initial salary correlates with job satisfaction, providing a deeper understanding of financial expectations and early career fulfilment. The findings are expected to inform UNESA's curriculum enhancements and support services by highlighting the educational experiences and career strategies that align with positive employment outcomes. Ultimately, this study aims to empower UNESA in delivering targeted alumni support and refining educational pathways that respond effectively to evolving industry demands, fostering sustainable career success and satisfaction among graduates.

**Keywords:** *employment outcomes, correlation study, career success, job satisfaction, tracer study*

### **INTRODUCTION**

In today's rapidly evolving job market, universities face a significant challenge in aligning their curricula and teaching methodologies with the

dynamic demands of the workforce. Globalization and technological advancements have dramatically reshaped the employment landscape, creating an environment that requires graduates to possess both academic knowledge and practical skills relevant to their professional fields (Schwab, 2017). As an integral part of higher education, the Information Systems program at the State University of Surabaya (UNESA) is particularly tasked with preparing graduates for the highly competitive and skill-intensive information technology industry. With information systems graduates now entering a globalized market, it is essential to assess how effectively their education prepares them to meet such demands, especially given the ever-increasing expectations for adaptability, technical competence, and continuous learning (World Economic Forum, 2020).

The need to evaluate alumni career success and the role of educational effectiveness has grown in importance. Studies have shown that educational alignment with labor market needs significantly impacts career outcomes, as graduates who find a strong match between their studies and job requirements tend to have higher career satisfaction and progression rates (Brown et al., 2021; Jackson, 2018). Given this, an understanding of how education translates into real-world outcomes for graduates of UNESA's Information Systems program could inform further improvements in curriculum design, particularly in light of emerging trends in digital skills and workforce adaptability. Hence, this study seeks to assess the effectiveness of education in supporting alumni career success, focusing on correlations between alumni profile variables—such as age, job waiting time, initial salary, and continuous skill development—and career achievements.

The advancement of knowledge, particularly in information technology and exact sciences, has led to rapid changes in the competency requirements in the workforce. Therefore, higher education institutions, which are responsible for producing job-ready human resources, must continuously evaluate the learning processes within them. This evaluation is crucial for higher education institutions to minimize the gap between the demand for human resources that align with actual workforce needs in society.

In discussions about the quantitative relationship between the number of graduates and labor market demands, attention is focused not only on the total number of graduates and available jobs but also on the relationship between fields of study and job categories, which is referred to as educational relevance. The most prevalent concern is the mismatch between the competencies of graduates and the demands of the job market (Schomburg, H., & Teichler, U., 2007).

Ideally, education should align with workforce needs. Relevance in education refers to the connection between educational outcomes and societal needs (Nurgiyantoro, 2018). The concept of relevance consists of two parts: internal relevance and external relevance. Internal relevance refers to the consistency among curriculum components, such as objectives, content,

learning processes, and evaluation. In other words, internal relevance pertains to the alignment between components within the curriculum. Meanwhile, external relevance refers to the alignment between the curriculum and the demands, needs, and developments within society.

This study poses two primary research questions: 1) How successful are alumni in achieving their desired career goals? and 2) Is there a correlation between the examined profile factors and employment outcomes? Such inquiries align with the broader aim of understanding how demographic and professional factors intersect to influence career trajectories, providing evidence-based insights that can bridge the gap between academic training and labor market requirements (Cheng et. al, 2022). By focusing on Information Systems alumni from the 2022 to 2024 cohorts, this research aims to provide a detailed and contextually relevant view of early career development, exploring the impact of key factors on alumni job success through rigorous correlation testing.

This study's objectives include not only providing insights into the extent to which alumni have achieved their career aspirations but also examining whether alumni continue to develop relevant skills post-graduation to remain competitive in the labor market. It further seeks to capture alumni perceptions of how well their education aligns with job requirements, thus offering a clearer understanding of educational relevance in professional contexts. Analyzing correlations among demographic factors, employment roles, career progression, and other employment metrics will provide a nuanced view of these influences (Arthur et al., 2020).

Expected outcomes of this research include enhanced insights into the relevance of UNESA's Information Systems curriculum to industry needs, identification of areas where alumni may require further support in career development, and an enriched understanding of alumni expectations in the workforce. Ultimately, this study aims to provide actionable insights that enable UNESA to adapt its educational offerings and support services to meet the evolving demands of the industry, ensuring graduates are well-prepared for sustainable and fulfilling careers in information technology.

## **METHODS**

This study employs a survey method with a correlation test approach to analyze alumni data, aiming to identify relationships between demographic variables of graduates and their employment factors. The primary focus of this research is to investigate the correlations between age, job waiting time, initial salary, and career progression with the competencies and values developed by the program, as well as the skills that need enhancement. The respondents in this study consist of graduates (alumni) of the Information Systems Program at the State University of Surabaya who completed their studies between 2022 and 2024.

This study applies a tracer study instrument designed by the University's Tracer Study Team. As such, this instrument serves not only as a measurement tool but also as a product of the development efforts conducted by the University's Tracer Study Team, with the researchers not directly involved in its development process. The research instrument consists of a structured questionnaire organized into three sections: general information about graduates, employment-related data, and evaluations of the learning or training experiences received by graduates.

To collect data from graduates, the tracer study instrument was distributed via the alumni platform available at [alumni.unesa.ac.id](http://alumni.unesa.ac.id). The questionnaire link was sent to registered alumni email addresses to facilitate access and participation. The tracer study instrument, as detailed in Appendix 2, serves as the primary data collection tool.

#### **a. Hypotheses Development**

**H1: There is a correlation between the time an individual begins their job search and the waiting period to secure employment.**

This hypothesis is grounded in theories that highlight how job-seeking timing and intensity impact employment outcomes. Job Search Theory (Faberman et al, 2022) posits that early job seekers are more likely to encounter job opportunities, which can reduce their waiting time to secure employment. Recent studies reinforce this view, suggesting that early and proactive job search behaviours are positively associated with reduced unemployment durations. For instance, a longitudinal study published in the *Journal of Vocational Behaviour* found that individuals with high job search self-efficacy and proactive behaviours often secure employment more quickly than those who delay (Wanberg et al., 2005). Additionally, research by J-PAL (2022) demonstrates that job search timing and approach significantly influence employment success, as early job search efforts improve visibility and align candidates better with market demands. These theories and findings collectively support the hypothesis that the timing of a job search is correlated with the duration it takes to obtain employment.

**H2: There is a correlation between the number of applications submitted to institutions and the number of institutions responding to those applications.**

This hypothesis is supported by theories and studies on job-seeking behaviours and application response rates. Job Search Theory suggests that the quantity of applications sent out is positively associated with response rates, as increased outreach expands the candidate's visibility and potential for employer engagement (Mortensen, 1986). By submitting applications to multiple

institutions, job seekers increase their chances of receiving responses, as the probability of a positive response typically rises with the number of applications.

Recent research supports this relationship. A study by Soffia, et al (2023) published in *Work, Employment, and Society* found that job seekers who applied to a larger number of positions reported higher response rates, attributing this to enhanced visibility and a broader network of potential employers. Additionally, a report from LinkedIn's Economic Graph (2023) revealed that candidates who apply widely tend to receive more responses, particularly in competitive job markets where high application volume improves the likelihood of securing employer interest. These findings support the notion that a higher number of applications correlates with an increased likelihood of responses from hiring institutions.

### **H3: There is a relationship between gender and job type.**

This hypothesis is supported by various theories and studies that discuss the influence of gender on occupational choices and job type distribution.

Recent studies corroborate this relationship. For example, a study published in the *Journal of Economic Perspectives* (2021) highlights that gender continues to play a significant role in job selection, with evidence showing persistent trends in occupational gender segregation across various sectors. Additionally, a 2022 report from the International Labour Organization (ILO) showed that certain job types remain predominantly gendered due to both traditional expectations and organizational practices. These theories and studies collectively support the hypothesis that gender is associated with the type of jobs individuals pursue or are more likely to be employed in.

### **H4: There is a correlation between total income and the type of employing institution.**

Recent studies reinforce these ideas. A report by the Bureau of Labor Statistics (2022) found that employees in private sector institutions often report higher average incomes than those in public sector roles, especially in fields like technology and finance. Similarly, a study in the *Journal of Labor Economics* (2021) showed that non-profit sector workers tend to earn lower total incomes than those in the private sector, often due to limited revenue streams and budget allocations. These theories and findings support the hypothesis that the type of employing institution correlates with variations in total income.

## **b. Data Collection and Processing**

Data collected from the survey is processed using descriptive statistical methods to provide insights into alumni's employment status and employer expectations. The analysis covers variables such as the waiting period for graduates to secure employment, job relevance to their field of study, initial salary upon securing a job, and the alignment between skills acquired during study and those required in their current roles. This analysis aims to evaluate alumni success in achieving career goals, examine the frequency of skill development and career advancement, and assess whether alumni feel that their education was relevant to their careers.

### **c. Tools and Software**

Data analysis is supported by Microsoft Excel and SPSS, which are utilized for data cleaning, transformation, and conducting statistical tests. Microsoft Excel provides an initial platform for organizing and preparing the data, while SPSS facilitates more complex statistical analysis, including the calculation of correlation coefficients to assess the relationships between variables.

## **RESULTS AND DISCUSSION**

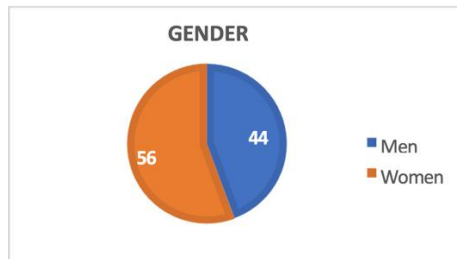
The aim of this study is to examine the results of a tracer study conducted on Bachelor's graduates in Information Systems from the State University of Surabaya over the past three years, specifically in 2021, 2022, and 2023. A total of 169 Bachelor's graduates in Information Systems completed the tracer study, with detailed findings outlined as follows.

### **A. Alumni Demographics**

#### **1. Graduate Profile**

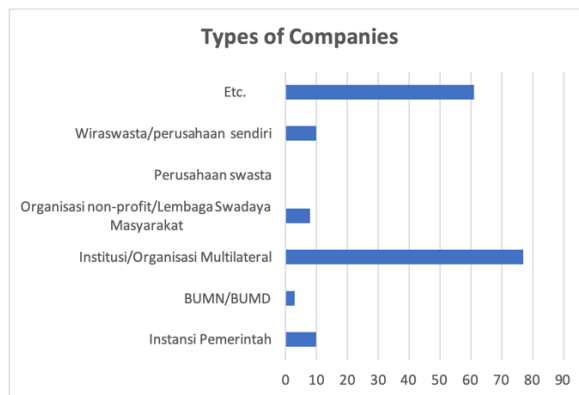
Out of a total of 174 graduates from the years 2021–2023, 169 have completed the tracer study. Below is the profile of graduates based on gender and graduation year.

Of the 169 surveyed graduates, 120 (or 71%) are currently employed in government and private institutions. Meanwhile, six other graduates have chosen entrepreneurship, either continuing family businesses or starting their own ventures. Additionally, among the respondents, 43 (or 25%) are currently unemployed; four of them have decided not to seek employment as they are continuing their studies. The remaining 39 (or 23%) are unemployed but actively seeking work, or are unable to work at the moment due to family and parental responsibilities.

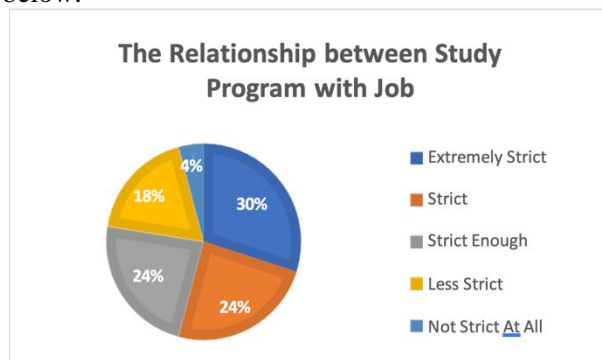


## 2. Current Employment and First Jobs After Graduation

Currently, graduates from the Information Systems program at UNESA are employed across various types of organizations, including government agencies, foundations, notary offices, private companies, hospitals, banks, startups, heavy equipment contractors in the mining sector, non-profit organizations, educational institutions, and entrepreneurial ventures. Graduates from UNESA's Information Systems program have been able to secure these positions thanks to their skills in information technology, knowledge, and work ethics.



The relevance of the study program to the graduates' current jobs is illustrated in the figure below.



Based on the figure above, it is evident that the relationship between the study program and the jobs held by the majority of graduates is very strong, at 78%. The remaining graduates hold positions that are less related or even unrelated to the study program. Jobs with a very strong connection to the program include programmer, systems analyst, digital marketing, and UI/UX designer. Meanwhile, jobs with a lower level of relevance to the study program include administrative staff, operators, notary staff, and service staff.

### **3. Job Search Duration and Time to Employment**

A total of 41 respondents, or approximately 34%, began their job search between 0-6 months before graduating. Meanwhile, 59 respondents, or around 50%, only started searching for a job 0-6 months after graduation. Data on the time required for respondents to secure employment is presented in the following table:

<i>Duration</i>	<i>Frequency</i>	<i>Percentage</i>
<= 6 months	109	91%
> 6 months	11	9%

From this table, it is evident that the majority of respondents, 91%, secured employment within 6 months of graduation, while the remaining 9% found jobs after more than 6 months.

### **4. Monthly Income**

Income is a key motivator for new graduates, similar to others, which drives many of them to seek employment immediately after graduation. In this study, as shown in the table below, the gross monthly income of employed graduates ranges from Rp 2,000,000 to Rp 4,000,000, with the majority of respondents (42%) falling within this range. Additionally, 35% of respondents earn between Rp 4,000,000 and Rp 6,000,000, and 14% of respondents earn over Rp 6,000,000. The smallest proportion of respondents, only 9%, receive a gross monthly income below Rp 2,000,000. This represents a positive start for most respondents, as they are earning a monthly income between Rp 2,000,000 and Rp 4,000,000 in professional, technical, or supervisory positions, with some administrative roles also falling within this salary range. The number of graduates earning more than Rp 6,000,000 per month is still quite low, as they have not been employed long enough to achieve higher earnings in their companies.

### **5. Emphasis on Learning Methods in the Study Program Perceived as Highly Useful for Graduates' First Jobs**

This study also assessed the extent to which the learning methods implemented in the Information Systems program at UNESA benefit graduates. Several learning methods used in the program include lectures, demonstrations, participation in research projects, internships, practical work, fieldwork, and discussions. The learning method rated by graduates as the most beneficial for their current jobs is shown in the table below.

<i>Learning Method</i>	<i>No Benefit (1)</i>	<i>Low (2)</i>	<i>Moderate (3)</i>	<i>High (4)</i>	<i>Very High (5)</i>	<i>Total Score (Frequency multiplied)</i>
Lectures	9	28	38	21	24	337
Demonstrations	10	40	29	25	16	363
Participation in Research Projects	14	28	36	25	17	357
Internships	22	26	23	18	31	350
Practical Work	13	28	36	21	22	349
Fieldwork	17	23	43	13	24	356
Discussions	16	20	23	39	22	329

## 6. Competencies Mastered by Graduates Compared to Competencies Considered Essential for Their First Jobs

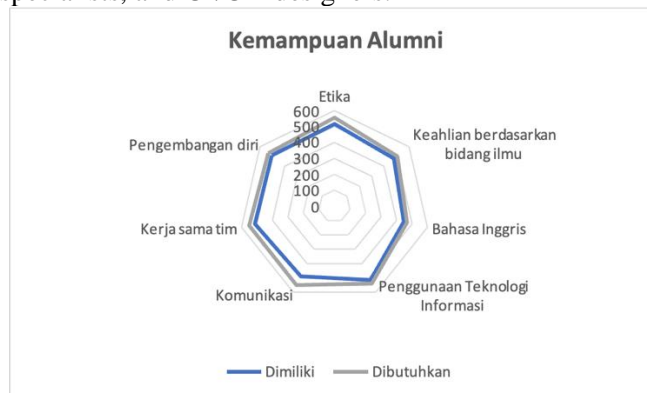
In the analysis of graduate competencies, two results were obtained: the score of competencies mastered by graduates at the time of graduation and the score of competencies considered very useful for their first jobs. The results are presented in the table below.

<i>Competency Mastered at Graduation</i>	<i>Total Score (Frequency Multiplied)</i>	<i>Essential Competency in First Job</i>	<i>Total Score (Frequency Multiplied)</i>
Ethics	513	Ethics	556
Field-Specific Skills	476	Field-Specific Skills	502
English Language	446	English Language	466
Information Technology Usage	518	Information Technology Usage	540
Communication	493	Communication	551
Teamwork	515	Teamwork	551
Self-Development	507	Self-Development	532

Based on the scores multiplied by frequency for competencies mastered by graduates of the Information Systems program, IT usage skills were the most mastered, with a score of 518, followed by teamwork skills with a score of 515, and ethics with a score of 513. These three competencies represent the most mastered skills by graduates at the time of graduation. However, among the primary skills expected of Information Systems graduates, communication skills did not receive a high score, only reaching 493. Meanwhile, based on the scores multiplied by frequency for competencies considered very important by Information Systems graduates, there are three competencies with high scores:

ethics, communication, and teamwork, with scores of 556, 551, and 551, respectively.

From these two results, it can be concluded that graduates of the Information Systems program have mastered two out of the three competencies that are highly needed and useful in their jobs: ethics and teamwork. However, for communication skills, which are considered important in the workplace, graduates only scored 493 upon graduation. Nevertheless, one of the three most mastered skills by graduates at the time of graduation—information technology usage skills, with a score of 518—is very strong, as this skill is highly useful and needed by graduates who primarily work in fields closely related to the Information Systems program, such as programmers, systems analysts, digital marketing specialists, and UI/UX designers.



## B. Correlation Testing

This testing was conducted using several types of correlation tests to determine the presence or absence of a correlation or relationship between two variables and to test the existing hypotheses. The data used in this test consisted of 120 respondents, who are alumni of the Information Systems program at UNESA, graduating in 2021, 2022, and 2023.

### 1. Correlation Between Job Search Start Time (Ordinal) and Waiting Period to Secure Employment (Ordinal)

This test was conducted using the Spearman correlation test, as both variables are ordinal data. Spearman's correlation is a non-parametric statistic, which means it does not require any assumptions about the normal distribution of the data being tested. The purpose of this test is to determine whether there is a correlation or relationship between the two variables. Additionally, this test was conducted to examine the following hypothesis:

**H1:** The sooner an individual begins their job search, the shorter the waiting period to secure employment.

For the variable representing the job search start time, coding was as follows: 1 for alumni who began job searching before graduation and 2 for alumni who started job searching after graduation. Below are the results of the correlation test between job search start time and the waiting period to secure employment:

Correlations			MULAI MENCARI PEKERJAAN	MASA TUNGGU DAPAT KERJA
Spearman's rho	MULAI MENCARI PEKERJAAN	Correlation Coefficient	1.000	.428**
		Sig. (2-tailed)	.	.000
		N	120	120
	MASA TUNGGU DAPAT KERJA	Correlation Coefficient	.428**	1.000
		Sig. (2-tailed)	.000	.
		N	120	120

\*\* . Correlation is significant at the 0.01 level (2-tailed).

- Based on the output of the Spearman correlation test above, the significance value or Sig. (2-tailed) between the job search start time and waiting period is  $0.000 < 0.05$ . This indicates that there is a significant correlation between these two variables.
- Based on the correlation test results, the correlation coefficient between job search start time and waiting period is 0.428. Thus, the relationship between job search start time and waiting period can be categorized as "moderate."
- Based on the output table, the correlation coefficient between job search start time and waiting period is positive at 0.428. This indicates a "positive" relationship between the two variables, meaning that the sooner someone starts their job search, the shorter their waiting period to secure employment.

Therefore, according to the three interpretations from the Spearman correlation test above, it can be concluded that the relationship between job search start time and waiting period is **significant, moderate, and positive**. This means that the alternative hypothesis (H1) is accepted.

## 2. Correlation Between Number of Applications Submitted (Ordinal) and Number of Responses Received (Ordinal)

This test was conducted using the Spearman correlation test, as both variables are ordinal data. Spearman's correlation is a non-parametric statistic, meaning it does not require any assumptions about the normal distribution of the data being tested. The purpose of this test is to determine whether there is a correlation or relationship between the two variables. Additionally, this test was conducted to examine the following hypothesis:

**H2:** There is a correlation between the number of institutions applied to and the number of institutions responding.

Below are the results of the correlation test between the number of applications submitted and the number of responses received:

Correlations			INSTANSI YANG DILAMAR	INSTANSI YANG MERESPON
Spearman's rho	INSTANSI YANG DILAMAR	Correlation Coefficient	1.000	.851**
		Sig. (2-tailed)	.	.000
		N	120	120
	INSTANSI YANG MERESPON	Correlation Coefficient	.851**	1.000
		Sig. (2-tailed)	.000	.
		N	120	120

\*\* . Correlation is significant at the 0.01 level (2-tailed).

- Based on the Spearman correlation test output above, the significance value or Sig. (2-tailed) between the number of applications submitted and the number of responses received is  $0.000 < 0.05$ . This indicates that there is a significant correlation between these two variables.
- Based on the correlation test results, the correlation coefficient between the number of applications submitted and the number of responses received is 0.851. Therefore, it can be concluded that the relationship between the number of applications submitted and the number of responses received is "very strong."
- Based on the output table above, the correlation coefficient between the number of applications submitted and the number of responses received is positive, at 0.851. This indicates a "positive" relationship between the two variables, meaning that the more applications submitted, the more responses received.

Therefore, based on the three interpretations from the Spearman correlation test above, it can be concluded that the relationship between the number of applications submitted and the number of responses received is significant, very strong, and positive. This means that the alternative hypothesis (H2) is accepted.

### 3. Correlation Between Gender (Nominal) and Job Type (Nominal)

This test was conducted using the Chi-Square correlation method, specifically the Phi correlation or Cramer's V coefficient. The Phi correlation is used to measure the strength of the relationship between two binary (dichotomous) variables. Binary variables are variables with only two categories (e.g., yes/no, male/female). Meanwhile, Cramer's V is used to measure the strength of the relationship between two categorical variables when one or both variables have more than two categories. Therefore, this test was conducted using the Chi-Square correlation method, specifically Phi or Cramer's V correlation, as the data being tested are nominal/categorical, meaning there is no inherent order or hierarchy, as is the case with gender.

In addition to determining whether there is a correlation between gender and job type, this test was also conducted to examine the hypothesis:

**H3:** There is a correlation between gender and job type.

In this correlation test, coding was applied to facilitate data processing using SPSS software. The gender variable was coded as 1 for male and 2 for female. For job type, coding was applied based on the relevance of the job to the study program, with 1 for "relevant" and 2 for "not relevant." Below are the results of the correlation test between gender and job type:

Symmetric Measures		Value	Approximate Significance
Nominal by Nominal	Phi	.339	.000
	Cramer's V	.339	.000
N of Valid Cases		120	

Based on the table above, it can be seen that the Approximate Significance (P-Value) is  $< 0.05$ , specifically 0.000, indicating that there is a significant relationship or correlation between gender and job type. The degree of relationship has a value of 0.339, meaning that the correlation between gender and job type is weak. This means that H3 is accepted.

The findings of this study provide valuable insights into the factors influencing the career trajectories of Information Systems graduates from UNESA. The significant, moderate, and positive correlation between early job search initiation and a shorter waiting period for employment highlights the advantage of proactive job-seeking behaviors (Lim & You, 2019). Graduates who began their job search prior to graduation tended to secure employment sooner, aligning with Job Search Theory, which suggests that early engagement in the job market increases exposure to opportunities (Lim & You, 2019). This result suggests that career services at universities could emphasize early job search strategies, potentially through internships or career fairs, to minimize post-graduation unemployment. Additionally, the strong correlation between the number of applications submitted and the response rate underscores the benefits of a broad job search strategy. Graduates who applied to more institutions received more responses, illustrating the importance of a high application volume to increase visibility and improve chances of securing job offers (van Hooft & Crossley, 2017). Universities might consider advising students on comprehensive application strategies that balance quality and quantity.

The weak correlation between gender and job type suggests that while some traditional gender associations may exist in specific roles, the field of Information Systems generally provides opportunities across gender lines (Silva, 2022). This finding may indicate a level of inclusivity in the field, though further exploration into potential implicit biases or barriers could ensure equal access to various job roles. The significant difference in income based on the type of institution emphasizes how institutional factors shape earning potential, with private sector roles often offering higher initial salaries due to competitive demand for skilled talent, while government and non-profit roles may prioritize benefits and job security over starting salary (Barros & Pereira,

2022). This finding is consistent with Labor Market Segmentation Theory, which explains how different sectors offer distinct compensation structures (Barros & Pereira, 2022). Universities could leverage this information by guiding students on realistic salary expectations across sectors, helping them make informed career choices.

Overall, these results reveal a complex interaction between job search behaviors, demographic factors, and institutional contexts in shaping employment outcomes. The findings suggest that career support programs should not only focus on skill development but also on effective job search strategies and realistic career planning. By encouraging proactive job engagement and providing insights into industry trends, universities can enhance the employability and career satisfaction of graduates in a competitive job market (Ho, et.al, 2023).

## CONCLUSION

This study investigated several aspects related to the career paths of Information Systems graduates from the State University of Surabaya (UNESA) from 2021 to 2023. By analyzing the relationships between variables such as job search timing, job response rates, gender, job type, total income, and the type of institution, significant insights were gained about the graduates' employment outcomes and the factors influencing them.

Overall, the findings highlight that proactive job-seeking behaviors, such as starting the job search early and applying to multiple institutions, can positively impact employment outcomes. Additionally, the type of institution plays a role in determining income, and gender may have some influence on job type. These insights underscore the importance of preparing graduates not only with relevant skills but also with effective job-seeking strategies to enhance their success in the labor market.

## REFERENCES

- Arthur, M. B., Inkson, K., & Pringle, J. (2020). *The new careers: Individual action and economic change*. SAGE Publications.
- Bakhtiar, M., & Latif, S. (2017). Tracer study alumni: Upaya pengembangan prodi bimbingan konseling Universitas Negeri Makassar. *Jurnal Kajian Bimbingan dan Konseling*, 2(1), 32–40. <https://doi.org/10.17977/um001v2i12017p032>
- Grimshaw, D., Fagan, C., Hebson, G., & Tavora, I. (2017). A new labour market segmentation approach for analysing inequalities: introduction and overview. In *Making work more equal* (pp. 1-32). Manchester University Press.

- Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
- Blau, F. D., Brinton, M. C., & Grusky, D. B. (2006). *The declining significance of gender?* Russell Sage Foundation.
- Brown, P., Lauder, H., & Cheung, S. Y. (2021). *The death of human capital? Its failed promise and how to renew it in an age of disruption*. Oxford University Press.
- Silva, L., Sampaio, S., & MARINHO, M. (2022). Gender Diversity in Technology Sector: Barriers and Perceptions Success of Women in Porto Digital. In *WORKSHOP Proceedings* <http://ceur-ws.org> ISSN (Vol. 1613, p. 0073). sn.
- Eagly, A. H., & Wood, W. (2012). Social role theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology: Volume 2* (pp. 458–476). Sage Publications.
- Fajaryati, N., Pambudi, S., Priyanto, P., Sukardiyono, T., Utami, A. D. W., & Destiana, B. (2015). Studi penelusuran (tracer study) terhadap alumni program studi pendidikan teknik informatika jurusan pendidikan teknik elektronika fakultas teknik Universitas Negeri Yogyakarta. *Elinvo (Electronics, Informatics, Vocational Education)*, 1(1), 44–45. <https://doi.org/10.21831/elinvo.v1i1.10878>
- International Labour Organization. (2022). *World employment and social outlook: Trends 2022*. ILO. <https://www.ilo.org>
- Jackson, D. (2018). Developing graduate career readiness in higher education: Shifting from extra-curricular internships to work-integrated learning. *International Journal of Work-Integrated Learning*, 19(1), 23–35.
- J-PAL. (2022). *Job search interventions and employment outcomes: Evidence from randomized evaluations*. Abdul Latif Jameel Poverty Action Lab. <https://www.povertyactionlab.org>
- Ho, T. T. H., Le, V. H., Nguyen, D. T., Nguyen, C. T. P., & Nguyen, H. T. T. (2023). Effects of career development learning on students' perceived employability: a longitudinal study. *Higher Education*, 86(2), 297–315.
- Wanberg, C. R., Glomb, T. M., Song, Z., & Sorenson, S. (2005). Job-search persistence during unemployment: a 10-wave longitudinal study. *Journal of applied psychology*, 90(3), 411.
- Karyono, G., & Hermanto, N. (2013). Rancang bangun sistem tracer study online pada STMIK AMIKOM PURWOKERTO. *Semantik*, 3(1), 126–133. Retrieved from <http://publikasi.dinus.ac.id/index.php/semantik/article/view/730>
- van Hoof, E. A., Kammeyer-Mueller, J. D., Wanberg, C. R., Kanfer, R., & Basbug, G. (2021). Job search and employment success: A quantitative review and future research agenda. *Journal of Applied Psychology*, 106(5), 674.

- Soffia, M., Wood, A. J., & Burchell, B. (2022). Alienation is not ‘Bullshit’: An empirical critique of Graeber’s theory of BS jobs. *Work, Employment and Society*, 36(5), 816-840.
- LinkedIn Economic Graph. (2023). *How application volume affects hiring outcomes in competitive markets*. LinkedIn. Retrieved from <https://economicgraph.linkedin.com>
- Mardiana, C. F. (2017). No title. *finance.detik.com*. Retrieved from <https://finance.detik.com/berita-ekonomi-bisnis/d-3620313/63-orang-indonesia-bekerja-tak-sesuai-jurusan>
- Faberman, R. J., Mueller, A. I., Şahin, A., & Topa, G. (2022). Job search behavior among the employed and non-employed. *Econometrica*, 90(4), 1743-1779.
- Nugroho, Z. A., & Arifudin, R. (2015). Sistem informasi tracer study alumni Universitas Negeri Semarang dengan aplikasi digital maps. *Scientific Journal of Informatics*, 1(2), 153–160. <https://doi.org/10.15294/sji.v1i2.4021>
- Primayana, K. H. (2016). Manajemen sumber daya manusia dalam peningkatan mutu pendidikan di perguruan tinggi. *Jurnal Penjaminan Mutu*, 1(2), 7. <https://doi.org/10.25078/jpm.v1i2.45>
- Behle, H. (2020). Students’ and graduates’ employability. A framework to classify and measure employability gain. *Policy reviews in higher education*, 4(1), 105-130.
- Schwab, K. (2017). *The fourth industrial revolution*. Crown Business.
- Sinambela, L. P. (2017). Profesionalisme dosen dan kualitas pendidikan tinggi. *Populis*, 2(4), 579–596.
- Schomburg, H., & Teichler, U. (2007). *Higher education and graduate employment in Europe: results from graduates surveys from twelve countries* (Vol. 15). Springer Science & Business Media.
- Chawla, N., Gabriel, A. S., da Motta Veiga, S. P., & Slaughter, J. E. (2019). Does feedback matter for job search self-regulation? It depends on feedback quality. *Personnel Psychology*, 72(4), 513-541.
- World Economic Forum. (2020). *The future of jobs report 2020*. World Economic Forum.
- Cheng, M., Adekola, O., Albia, J., & Cai, S. (2022). Employability in higher education: a review of key stakeholders' perspectives. *Higher Education Evaluation and Development*, 16(1), 16-31.