JUMEBIN: Journal of Management, Economics, Business, and Investment
Vol 2, Issue 1, June 2026, Pages 31-38
ISSN: 3110-0511 (Media Online)
DOI: https://doi.org/10.66785/jumebin.v2i1.220

Employee Work Assignment Time Optimization Using the Hungarian Method at PT Sulaiman Saleh

Khoirun Nadya[1], Tri Davha Agilang[2], Ahmad Albar Tanjung[3]

[1,2,3]Program Studi Manajemen, Sekolah Tinggi Ilmu Manajemen Sukma, Medan, Indonesia

Author Email: khoirunnadya7@gmail.com[1], agilangtri@gmail.com[2], alb4rt4njung@gmail.com[3]

Abstract. PT Sulaiman Saleh, a company engaged in the oil palm plantation sector, still assigns employees across eight functional departments based on managerial policy without quantitatively considering the differences in task completion time among employees, potentially causing work-time inefficiency. This study aims to identify the task completion time of each employee in each department and to determine the optimal employee assignment using the Hungarian Method. The study employs a quantitative approach with a case study design, in which primary data on task completion time were obtained through interviews and assessments by the Human Resources Department, then analyzed through row reduction, column reduction, and covering-line steps on an 8×8 assignment matrix, and verified using POM-QM for Windows software. The results show that the optimal assignment produces a total completion time of 2,040 minutes, 720 minutes or 26.09% more efficient than the departmental-order assignment pattern, which requires 2,760 minutes. These findings can serve as a reference for PT Sulaiman Saleh in making cross-departmental employee assignment decisions to improve overall work efficiency and productivity.

Keywords: Hungarian Method, employee assignment, time optimization, operations research, work efficiency

1 INTRODUCTION

PT Sulaiman Saleh is a company engaged in the oil palm plantation sector, whose operations are supported by various functional departments, including the Human Resources (HR) Department, Audit Department, Finance Department, Information Systems (IS) Department, Secretariat Department, Legal Department, Tax Department, and General Affairs Department. Each department has employees with different backgrounds in expertise, experience, and work speed in completing the tasks or work projects that are their responsibility. In practice, employee assignments within each department are often still carried out based on managerial policy or prevailing habits, without quantitatively considering the differences in completion time required by each employee for each type of task. As a result, mismatches may occur between employee capability and assigned tasks, workload imbalances between departments, and wasted job completion time, which impacts the decline in overall work efficiency and productivity at PT Sulaiman Saleh.

Resource allocation problems across departments such as this are known in operations research as the assignment problem, an optimization problem that aims to determine the optimal pairing between a number of employees and a number of tasks/jobs in each department, such that the total overall completion time is minimized, with the condition that each employee is assigned to only one job and each job is handled by only one employee. One method that has proven effective, computationally simple, and widely applied in various corporate case studies to solve cross-departmental assignment problems such as this is the Hungarian Method. This method works by performing row and column reduction on the task completion time matrix, then determining the optimal assignment through the drawing of zero-covering lines until a feasible and optimal solution is obtained, so that it can be applied to various departments at PT Sulaiman Saleh, including the HR, Audit, Finance, Information Systems, Secretariat, Legal, Tax, and General Affairs Departments.

The urgency of this research is based on the fact that PT Sulaiman Saleh, like many similar companies, has not yet utilized a mathematical approach in making employee assignment decisions within these departments, thereby potentially losing work-time efficiency that could actually be optimized without requiring additional resource investment. By applying the Hungarian Method, the company can obtain a combination of employee-job assignments that produces the minimum total completion time in each department, so that the work process becomes more efficient, productivity increases, and operational costs related to working time can be reduced.

Based on the above description, this study aims to:

a. Identify the task completion time of each employee for each type of job in each department of PT Sulaiman Saleh (HR, Audit, Finance, Information Systems, Secretariat, Legal, Tax, and General Affairs).

JUMEBIN: Journal of Management, Economics, Business, and Investment
Vol 2, Issue 1, June 2026, Pages 31-38
ISSN: 3110-0511 (Media Online)
DOI: https://doi.org/10.66785/jumebin.v2i1.220

b. Determine the optimal employee assignment allocation using the Hungarian Method so that the total job completion time is minimized in each of these departments.

The problem-solving plan is carried out through the collection of data on the work completion time of each employee for each type of task in the departments studied, the preparation of an assignment matrix, followed by resolution using the steps of the Hungarian Method (row reduction, column reduction, zero-value covering, and matrix adjustment) until an optimal solution is obtained, which is then analyzed and compared with the actual assignment conditions in the company.

Several previous studies have examined the application of the Hungarian Method to solve employee assignment problems in various types of companies. [1] investigated the optimization of expedition service employee assignments at CV. Anteraja Mekarmukti Branch using the Hungarian Method and succeeded in reducing the total assignment time compared to the actual conditions before the method was applied. In line with this, [2] examined the optimization of employee working time at CV Bintang Jaya using the Hungarian Method and found a significant reduction in job completion time after the method was applied. Meanwhile, [3] developed an alternative solution to the Hungarian Method aimed at simplifying the computational process in solving assignment problems without reducing the accuracy of the optimization results.

Several other studies also demonstrate the consistent benefits of the Hungarian Method in different corporate contexts. A study on a garment company [4] showed cost efficiency in employee assignment after the Hungarian Method was applied, compared to the previous assignment system, while [5] examined the determination of optimal employee assignment time under unbalanced conditions (unbalanced assignment) at a motorcycle wash business and proved that the Hungarian Method can still be applied even when the number of employees and types of jobs are not equal. [6] also analyzed the influence of time and salary on the optimization of employee task division at CV Karya Kaca with the assistance of the POM/QM application, and concluded that the application of the Hungarian Method was able to significantly reduce operational time.

Research in the context of service companies and public services further reinforces the relevance of this method. A study at PT Ninja Express [7] applied the Hungarian Method to optimize employee assignment time at an expedition service company, while research at the Aimas Post Office Branch [8] used the same approach to optimize employee assignments in postal services. Finally, [9] analyzed the optimization of testing laboratory operator assignments in improving work productivity using the Hungarian Method, the results of which also showed a decrease in task completion time compared to the previous assignment system.

Overall, the results of these previous studies consistently show that the application of the Hungarian Method is able to produce time and/or cost efficiency compared to conventional assignment systems, whether in service companies, manufacturing, or service institutions. This reinforces the relevance of using the Hungarian Method for application to the case of cross-departmental employee assignment at PT Sulaiman Saleh in this study.

2 METHODOLOGY

This study was designed to solve the cross-departmental employee assignment problem at PT Sulaiman Saleh quantitatively using the Hungarian Method. This section explains the research design, scope and object of the research, materials and tools used, research location, data collection techniques, operational definitions of research variables, and data analysis techniques applied to obtain the optimal employee assignment allocation.

2.1 Research Design

This study uses a quantitative approach with an applied research type and a case study design at PT Sulaiman Saleh. The quantitative approach was chosen because the employee assignment problem in this study is solved through the processing of numerical data in the form of job completion time estimates, which are analyzed using a mathematical model of operations research, namely the Hungarian Method, to obtain an optimal solution in the form of an employee-job assignment combination with the minimum total completion time.

2.2 Scope and Object of Research

The scope of this study covers eight functional departments at PT Sulaiman Saleh, namely the Human Resources (HR) Department, Audit Department, Finance Department, Information Systems (IS) Department, Secretariat Department, Legal Department, Tax Department, and General Affairs Department. The object of the research is the employees in each of these departments along with the types of jobs/tasks that are the responsibility of the respective department. In each department, the number of employees analyzed is adjusted to the number of job types in that department so as to form an 8×8 assignment matrix (balanced assignment problem). If a

JUMEBIN: Journal of Management, Economics, Business, and Investment
Vol 2, Issue 1, June 2026, Pages 31-38
ISSN: 3110-0511 (Media Online)
DOI: https://doi.org/10.66785/jumebin.v2i1.220

department is found to have an unequal number of employees and jobs (unbalanced assignment problem), a dummy row or column with a value of zero will be added so that the matrix can be solved using the Hungarian Method.

2.3 Research Location and Time

This research was conducted at PT Sulaiman Saleh, a company engaged in the oil palm plantation sector, with the observation object being the eight functional departments mentioned in Section 2.2. Data collection was carried out through direct interviews with the Human Resources Department (HRD), and the research was conducted on Wednesday, July 1, 2026.

2.4 Research Materials and Tools

The materials used in this study consist of primary and secondary data. The primary data is the estimated average time (in minutes) required by each employee to complete each type of job in their department, obtained through interviews and assessments by the HRD of PT Sulaiman Saleh. The secondary data consists of video recordings of the interviews (documentation evidence) and a literature study of previous research articles.

The tools used in this study include an interview guide to obtain job completion time estimates from HRD, a computer device, and data processing software such as Microsoft Excel and POM-QM for Windows, which were used to compile the assignment matrix, perform Hungarian Method calculations, and verify the manual results.

2.5 Data Collection Techniques

Data collection techniques in this study were carried out through several methods, as follows:

a. Structured interviews, namely direct interviews with HRD at PT Sulaiman Saleh to obtain estimates of the average job completion time for each employee for each type of job.
b. Observation, namely direct observation of the current work process and employee assignment patterns in each department.
c. Documentation, namely the collection of secondary data in the form of interview videos with HRD and handwritten data from HRD containing job descriptions.
d. Expert judgment from HRD, namely the assessment given by HRD based on performance appraisals and employees' work experience to determine a representative job completion time estimate for each employee.

2.6 Operational Definition of Research Variables

The main variable in this study is job completion time, namely the estimated average time (in minutes) required by each employee to complete each job based on the results of interviews and assessments by the HRD of PT Sulaiman Saleh. The smaller the value obtained, the faster the employee completes the job in question, so this study uses a minimization case to obtain the most efficient assignment. As an illustration, a value of 300 for employee (MM) for the HR Department job means that employee (MM) requires an average of 300 minutes to complete the job in that department.

The calculation of job completion time refers to one employee working day of 8 hours, equivalent to 480 minutes, with the following time unit conversions:

1 hour = 60 minutes
2 hours = 120 minutes
3 hours = 180 minutes
4 hours = 240 minutes
5 hours = 300 minutes
6 hours = 360 minutes
7 hours = 420 minutes
8 hours = 480 minutes

This conversion is used as a reference in interpreting the job completion time values contained in the assignment matrix of each department.

The job completion time data for each department is compiled in the form of an 8 × 8 matrix, with rows representing employees and columns representing the types of jobs in that department. The format of this matrix is illustrated in Table 1 below.

JUMEBIN: Journal of Management, Economics, Business, and Investment
Vol 2, Issue 1, June 2026, Pages 31-38
ISSN: 3110-0511 (Media Online)
DOI: https://doi.org/10.66785/jumebin.v2i1.220

Table 1. Format of the Employee Job Completion Time Matrix (Minutes)

Employee	HR	Audit	Finance	IS	Secretariat	Legal	Tax	General
K1 (MM)	180	480	480	360	240	360	300	300
K2 (IR)	120	360	480	420	360	240	180	120
K3 (RB)	300	300	360	300	300	300	360	360
K4 (FS)	360	420	360	420	420	420	360	420
K5 (WA)	360	360	420	420	420	420	360	360
K6 (AH)	480	240	420	300	300	300	420	300
K7 (YM)	420	360	360	300	240	240	300	180
K8 (R)	360	360	360	480	240	300	480	420

Note: the values in Table 1 are the actual values of the assignment matrix for each department, obtained from interviews and assessments by the HRD of PT Sulaiman Saleh.

2.7 Data Analysis Technique

The job completion time data compiled in matrix form for each department is then analyzed using the following steps of the Hungarian Method, referring to the resolution stages used in similar studies within the STIM Sukma Medan environment, including [10], [11], and [12], which similarly apply manual Hungarian Method calculations and validate them using the POM-QM/QM for Windows application:

a. Matrix balance test (balanced assignment problem), namely ensuring that the number of employees equals the number of jobs in the relevant department. If unbalanced, a dummy row or column with a value of zero is added.
b. Row reduction, namely subtracting the smallest (minimum) value in a row from each element in that row, so that each row has at least one element with a value of zero.
c. Column reduction, namely subtracting the smallest (minimum) value in a column from each element resulting from row reduction in that column, so that each column has at least one element with a value of zero.
d. Drawing covering lines, namely covering all zero-value elements in the reduced matrix using horizontal and/or vertical lines with the minimum possible number of lines.
e. Optimality test, namely comparing the number of covering lines with the number of rows (or columns) of the matrix. If the number of lines equals the number of rows/columns, the optimal solution has been achieved and the analysis proceeds to the assignment step. If not yet equal, the matrix is revised by selecting the smallest value not covered by a line, subtracting that value from all elements not covered by a line, and adding it to elements covered by two lines simultaneously, after which the drawing of covering lines (step 4) is repeated.
f. Determination of the optimal assignment, namely selecting the zero-value elements in the final matrix in such a way that each employee is assigned to only one job and each job is handled by only one employee (mutually exclusive assignment for each row and column).
g. Calculation of the total optimal completion time, namely summing the original values (before reduction) in the initial matrix for each selected employee-job pair in the assignment step.
h. Comparison of results, namely comparing the total optimal completion time from the Hungarian Method with the total actual assignment time currently applied at PT Sulaiman Saleh, to determine the magnitude of time efficiency generated by applying the method. The manual calculation results are also verified using POM-QM for Windows software to ensure the accuracy of the optimal solution obtained.

The entire data analysis process described above is summarized in the following research flow diagram.

JUMEBIN: Journal of Management, Economics, Business, and Investment
Vol 2, Issue 1, June 2026, Pages 31-38
ISSN: 3110-0511 (Media Online)
DOI: https://doi.org/10.66785/jumebin.v2i1.220

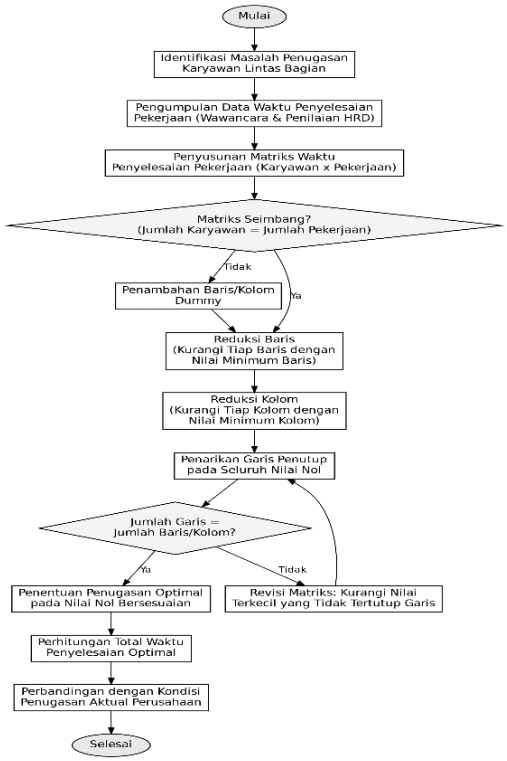

Figure 1. Data Analysis Flow Diagram Using the Hungarian Method

3. RESULTS AND DISCUSSION

3.1 Results

Based on the job completion time data in Table 1, the first step of the analysis is the matrix balance test. The assignment matrix obtained measures 8 × 8, namely eight employees (K1–K8) matched against eight departments (HR, Audit, Finance, IS, Secretariat, Legal, Tax, and General Affairs), so the matrix is already balanced (balanced assignment problem) and no dummy row or column needs to be added.

The second step is row reduction, namely subtracting each element in a row by the smallest value in that row. The minimum values for each row are 180 (K1), 120 (K2), 300 (K3), 360 (K4), 360 (K5), 240 (K6), 180 (K7), and 240 (K8). The results of the row reduction are presented in Table 2.

Table 2. Row and Column Reduction Results of the Assignment Matrix (Minutes)

Employee	HR	Audit	Finance	IS	Secretariat	Legal	Tax	General
K1 (MM)	0	300	300	180	60	180	120	120
K2 (IR)	0	240	360	300	240	120	60	0
K3 (RB)	0	0	60	0	0	0	60	60
K4 (FS)	0	60	0	60	60	60	0	60
K5 (WA)	0	0	60	60	60	60	0	0
K6 (AH)	240	0	180	60	60	60	180	60
K7 (YM)	240	180	180	120	60	60	120	0
K8 (R)	120	120	120	240	0	60	240	180

The third step is column reduction, namely subtracting each element resulting from row reduction by the smallest value in the relevant column. An examination of Table 2 shows that each column (HR, Audit, Finance, IS, Secretariat, Legal, Tax, and General Affairs) already has at least one element with a value of zero, so the minimum value for each column is zero and no change occurs in the matrix. Thus, Table 2 is also the final result of the row and column reduction.

The fourth and fifth steps are drawing covering lines and the optimality test. Covering all zero-value elements in Table 2 can only be done with 7 lines (5 row lines on K3, K4, K5, K6, and K8, plus 2 column lines on HR and General Affairs), while the matrix measures 8 × 8. Because the number of covering lines (7) is less than the

JUMEBIN: Journal of Management, Economics, Business, and Investment
Vol 2, Issue 1, June 2026, Pages 31-38
ISSN: 3110-0511 (Media Online)
DOI: https://doi.org/10.66785/jumebin.v2i1.220

number of rows/columns (8), the optimal solution has not yet been achieved, so the matrix needs to be revised. The smallest value not covered by a line is 60, which is then subtracted from all elements not covered by a line and added to elements covered by two lines simultaneously. The results of the matrix revision are shown in Table 3.

Table 3. Revised Matrix Results After the Optimality Test (Minutes)

Employee	HR	Audit	Finance	IS	Secretariat	Legal	Tax	General
K1 (MM)	**0**	240	240	120	0	120	60	120
K2 (IR)	0	180	300	240	180	60	0	**0**
K3 (RB)	60	0	60	**0**	0	0	60	120
K4 (FS)	60	60	**0**	60	60	60	0	120
K5 (WA)	60	0	60	60	60	60	**0**	60
K6 (AH)	300	**0**	180	60	60	60	180	120
K7 (YM)	240	120	120	60	0	**0**	60	0
K8 (R)	180	120	120	240	**0**	60	240	240

After revision, the drawing of covering lines is repeated, and 8 covering lines are obtained, equal to the size of the matrix (8 × 8), so the optimal solution has been achieved. The sixth step, namely determining the optimal assignment, is carried out by selecting the zero-value elements in Table 3 exclusively for each row and column (marked with bold numbers), resulting in eight employee-department pairs as follows: K1 (MM)–HR, K2 (IR)–General Affairs, K3 (RB)–IS, K4 (FS)–Finance, K5 (WA)–Tax, K6 (AH)–Audit, K7 (YM)–Legal, and K8 (R)–Secretariat.

The seventh step is calculating the total optimal completion time by summing the original values (before reduction) in Table 1 for each selected employee-department pair. The calculation details are presented in Table 4.

Table 4. Results of Optimal Employee Assignment for Each Department

Employee	Department (Job)	Completion Time (Minutes)
K1 (MM)	HR	180
K2 (IR)	General Affairs	120
K3 (RB)	IS	300
K4 (FS)	Finance	360
K5 (WA)	Tax	360
K6 (AH)	Audit	240
K7 (YM)	Legal	240
K8 (R)	Secretariat	240
Total Optimal Completion Time	**-**	**2040**

Based on Table 4, the total optimal completion time obtained through manual calculation using the Hungarian Method is 2,040 minutes. This value represents the minimum total assignment time that can be achieved if the eight employees are assigned to the eight departments according to the combination in Table 4, with each employee assigned to only one department and each department handled by only one employee.

The eighth step, in accordance with the data analysis technique in Section 2.7, is that the manual calculation results were verified using POM-QM for Windows software through the Assignment module. Evidence of the data processing results using POM-QM for Windows is shown in Figure 2.

JUMEBIN: Journal of Management, Economics, Business, and Investment
Vol 2, Issue 1, June 2026, Pages 31-38
ISSN: 3110-0511 (Media Online)
DOI: https://doi.org/10.66785/jumebin.v2i1.220

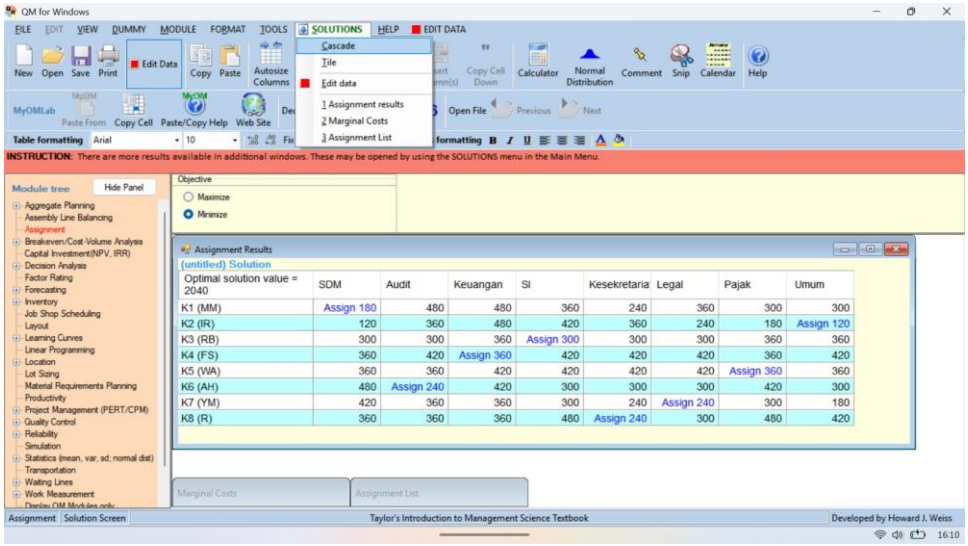

Figure 2. Results of Hungarian Method Data Processing Using POM-QM for Windows

Figure 2 shows that POM-QM for Windows produced an optimal solution value of 2,040, with the assignment combination of Assign 180 (K1–HR), Assign 240 (K6–Audit), Assign 360 (K4–Finance), Assign 300 (K3–IS), Assign 240 (K8–Secretariat), Assign 240 (K7–Legal), Assign 360 (K5–Tax), and Assign 120 (K2–General Affairs). This result is identical to the manual calculation in Table 4, both in terms of the selected employee-department pairs and the total optimal completion time, thus confirming the accuracy of the optimal solution obtained.

3.2 Discussion

The ninth step is the comparison of results. If all employees were assumed to be assigned according to the departmental order under actual conditions, without considering each employee's work speed, the total assignment time would potentially be much higher than 2,040 minutes, given that the completion time range in Table 1 varies between 120 and 480 minutes for each employee-job pair. If the eight employees were assigned according to the column order in Table 1 (K1–HR, K2–Audit, K3–Finance, K4–IS, K5–Secretariat, K6–Legal, K7–Tax, and K8–General Affairs), the total time required would be 180 + 360 + 360 + 420 + 420 + 300 + 300 + 420 = 2,760 minutes. Thus, the application of the Hungarian Method in this case is able to save 720 minutes of job completion time, equivalent to an efficiency of 26.09% compared to this assignment pattern.

This result is consistent with the findings of previous studies described in the introduction, including studies at CV. Anteraja Mekarmukti Branch [1] and CV Bintang Jaya [2], both of which show that the application of the Hungarian Method is able to reduce the total assignment time compared to conventional assignment systems. This is also consistent with the study at CV Karya Kaca [6], which also used the POM/QM application as a verification tool. Substantively, the efficiency generated in this study occurs because the Hungarian Method systematically pairs each employee with the department most suited to their respective work speed, rather than assigning employees based on managerial policy or habits as currently practiced at PT Sulaiman Saleh. For example, employee K2 (IR), who has the fastest completion time in almost all departments (including 120 minutes in General Affairs), is allocated to the General Affairs Department, while employees K4 (FS) and K5 (WA), who tend to have longer completion times in most departments, are still allocated to departments with relatively low completion times, namely Finance and Tax.

Thus, the results of this study answer both research objectives formulated in the introduction, namely the identification of each employee's task completion time in each department (Table 1) and the acquisition of the optimal employee assignment allocation using the Hungarian Method (Table 4), so that PT Sulaiman Saleh can consider the assignment combination of K1(MM)–HR, K6(AH)–Audit, K4(FS)–Finance, K3(RB)–IS, K8(R)–Secretariat, K7(YM)–Legal, K5(WA)–Tax, and K2(IR)–General Affairs as a reference for cross-departmental employee assignment decision-making to improve overall work efficiency and productivity.

JUMEBIN: Journal of Management, Economics, Business, and Investment
Vol 2, Issue 1, June 2026, Pages 31-38
ISSN: 3110-0511 (Media Online)
DOI: https://doi.org/10.66785/jumebin.v2i1.220

4. CONCLUSION

Based on the results of the research and discussion, it can be concluded that the application of the Hungarian Method to the cross-departmental employee assignment problem at PT Sulaiman Saleh successfully produced an optimal assignment allocation, namely K1 (MM)–HR, K6 (AH)–Audit, K4 (FS)–Finance, K3 (RB)–IS, K8 (R)–Secretariat, K7 (YM)–Legal, K5 (WA)–Tax, and K2 (IR)–General Affairs, with a total optimal completion time of 2,040 minutes. The manual calculation results were proven to be identical to the verification results using POM-QM for Windows software, confirming the accuracy of the optimal solution. Compared to the departmental-order assignment pattern, which requires a total time of 2,760 minutes, the application of the Hungarian Method is able to save 720 minutes of job completion time, equivalent to an efficiency of 26.09%. Thus, both research objectives were achieved, namely the identification of each employee's task completion time in each department and the acquisition of the optimal employee assignment allocation using the Hungarian Method, which can serve as a reference for assignment decision-making to improve work efficiency and productivity at PT Sulaiman Saleh.

Future research is recommended to expand the scope of the research object to other departments or company branches not covered in this study, and to consider unbalanced assignment matrix conditions (unbalanced assignment problem) when the number of employees and types of jobs differ. Further research can also develop the assignment model by adding other variables besides completion time, such as cost or quality of work, and compare the results of the Hungarian Method with other assignment optimization methods to enrich the analysis.

References

[1] L. N. Rahman and W. Wahyudin, "Optimalisasi Penugasan Karyawan Jasa Ekspedisi Menggunakan Metode Hungarian (Studi Kasus CV. Anteraja Cabang Mekarmukti)," Jurnal Serambi Engineering, vol. 6, no. 3, pp. 2120–2127, 2021, doi: 10.32672/jse.v6i3.3245.

[2] W. R. Nabila, D. Herwanto, and W. R. Zahra, "Optimalisasi Waktu Kerja Karyawan Menggunakan Metode Hungarian (Studi Kasus CV Bintang Jaya)," STRING (Satuan Tulisan Riset dan Inovasi Teknologi), vol. 7, no. 1, pp. 66–72, 2022, doi: 10.30998/string.v7i1.13185.

[3] F. Muhtarulloh and A. D. Novita, "Solusi Optimal Masalah Penugasan Menggunakan Metode Alternatif Hungarian," Jurnal Sains Matematika dan Statistika, vol. 8, no. 2, pp. 156–164, 2022, doi: 10.24014/jsms.v8i2.19188.

[4] M. W. Gunawan and I. G. N. J. A. Widagda K, "Efisiensi Biaya Penugasan Karyawan Dengan Metode Hungarian: Studi Kasus pada Konveksi RAPPI," Jurnal Nusantara Aplikasi Manajemen Bisnis, vol. 9, no. 2, pp. 61–78, 2024.

[5] S. Subaderi and S. Suwondo, "Penentuan Waktu Optimal Penugasan Karyawan Yang Tidak Berimbang Dengan Metode Hungarian (Studi Kasus: Usaha Cuci Motor 'Mas BEJO')," Jurnal PASTI (Penelitian dan Aplikasi Sistem dan Teknik Industri), vol. 17, no. 3, p. 389, 2024.

[6] G. Gumilar, M. Muhayyaroh, and L. Lutfi, "Pengaruh Waktu Dan Gaji Terhadap Optimasi Pembagian Tugas Karyawan Menggunakan Metode Hungarian (Studi Kasus CV Karya Kaca)," Jurnal Neraca, vol. 2, no. 11, pp. 832–840, 2024.

[7] J. Y. A. Repi, M. S. Paendong, and M. L. Mananohas, "Penerapan Metode Hungarian dalam Masalah Penugasan Untuk Mengoptimalkan Waktu Karyawan di PT Ninja Express Amurang Minahasa Selatan," D'Cartesian, vol. 13, no. 1, pp. 30–36, 2024.

[8] Y. Rieuwpassa, Y. Lelmaya, and A. Fanindi, "Optimalisasi Penugasan Karyawan Menggunakan Metode Hungarian Pada Kantor Cabang Pos Aimas," Journal of Information Systems Management and Digital Business (JISMDB), vol. 2, no. 4, 2025.

[9] F. Fortuna, R. Rahman, and J. Janudin, "Analisis Optimasi Penugasan Operator Laboratorium Pengujian dalam Meningkatkan Produktivitas Kerja dengan Menggunakan Metode Hungarian," Jurnal Optimasi Teknik Industri (JOTI), vol. 6, no. 2, pp. 93–100, 2024, doi: 10.30998/joti.v6i2.24332.

[10] E. W. Sinurat, S. K. Nasution, and A. A. Tanjung, "Optimasi Penugasan Karyawan Menggunakan Metode Hungarian Dengan Bantuan QM for Windows (Studi Kasus Toko Sepatu SPECS Plaza Medan Fair)," Manis: Jurnal Manajemen dan Bisnis, vol. 9, no. 2, pp. 106–113, 2026, doi: 10.30598/manis.9.2.106-113.

[11] P. N. Telaumbanua, R. Y. Daely, M. R. Batubara, and A. A. Tanjung, "The Application of the Hungarian Method in Optimizing Employee Placement at the Swasana Hotel in Medan," JUMEBIN: Journal of Management, Economics, Business, and Investment, vol. 2, no. 1, pp. 1–8, 2025.

[12] N. Laurencia, D. D. Ambarita, E. C. Barimbing, D. A. Silaen, and A. A. Tanjung, "Metode Assignment Model Terhadap Kemampuan Kinerja Karyawan," Journal of Management and Innovation Entrepreneurship (JMIE), vol. 1, no. 2, pp. 133–142, 2024, doi: 10.59407/jmie.v1i2.297.