

BAB 5

KESIMPULAN DAN SARAN

Pada bab ini akan berisikan kesimpulan pada penelitian ini. Selain itu terdapat pula saran-saran terkait penelitian ini.

V.1 Kesimpulan

Dari penelitian kali ini, terdapat beberapa kesimpulan yang dapat diambil, antara lain:

1. Model persamaan total biaya pembangunan *hub* dan transportasi ketika perusahaan dihadapkan dengan keputusan untuk menentukan *hub* yang akan dibentuk dengan mempertimbangkan jarak, permintaan dan investasi dapat dilihat pada Bab 4 dari persamaan 4.1 – 4.6.
2. Model penentuan rute kendaraan yang dapat meminimasi biaya transportasi dapat dilihat pada Bab 4 dari persamaan 4.7 – 4.14.
3. Hasil dari implementasi pada truk yang ditugaskan untuk mengirimkan barang dari *distribution centre* menuju setiap *hub* dapat dilihat pada Bab 4 dari Gambar 4.1 dan 4.3 – 4.5.
4. Hasil dari implementasi pada truk yang ditugaskan untuk mengirimkan barang dari *distribution centre* menuju setiap *non-hub* dapat dilihat pada Bab 4 dari Gambar 4.2 dan 4.6 – 4.8.

5. Bobot jarak optimal yang diusulkan untuk permasalahan yang terdapat pada penelitian adalah dengan menggunakan bobot jarak sebesar 0,9 - 1 dengan biaya modal yang dibutuhkan terkecil yaitu Rp. 22.695.000.000,00 dan total biaya transportasi terendah yaitu Rp. 70.851.900,00. Tetapi, bobot tersebut hanya sebuah preferensi bagi sebuah perusahaan dalam meningkatkan keuntungan berdasarkan minimasi total biaya transportasi, akan kembali kepada perusahaan itu sendiri memiliki preferensinya dalam melakukan pelayanan.

V.2 Saran

Terdapat beberapa saran yang perlu disampaikan kepada perusahaan terkait penelitian yang telah dilakukan antara lain sebagai berikut.

1. Memasukan analisa kriteria lain dalam menentukan *hub* seperti regulasi, etos kerja dan lainnya.
2. Memasukan biaya pinalti ketika tidak seluruh permintaan dapat dilayani oleh *3rd party logistics*.
3. Penggunaan data *real* karena terdapat keterbatasan dari model yang akan diuji dilakukan dengan menggunakan data hipotetik.

DAFTAR PUSTAKA

- Alumur S, Kara B.Y., & Karasan O.E. (2012). Multimodal Hub Location and Hub Network Design. *Omega*, 40(6): 927–939.
- Angelelli, E., & Speranza, M. G. (2002). The Periodic Vehicle Routing Problem with Intermediate Facilities. *European Journal of Operational Research*, 233-247.
- Baldacci, R., Battarra, M., & Vigo, D. (2008). Routing a Heterogeneous Fleet of Vehicles. Dalam B. Golden, S. Raghavan, & E. Wasil, *The Vehicle Routing Problem: Latest Advances and New Challenges*. 3-27. Venezia: Springer.
- Bowersox, D.J., Stank, P.D., & Daugherty, P.J. (1999), “Lean Launch: Managing Product Introduction Risk Through Response-Based Logistics”, *Journal of Production Innovative Management*, Vol. 16, 557-568.
- Braekers, K., Ramaekers, K., & Nieuwenhuyse, I. V. (2015). The Vehicle Routing Problem: State of the Art Classification and Review. *Computers & Industrial Engineering*.
- Campbell J.F. & O’Kelly M.E. (2012). Twenty-five years of hub location research. *Transportation Science*, 46(2): 153–169.
- Carolina L.S.V & Monica M.M.L. (2016). Models and Methods for Logistics Hub Location : A Review Towards Transportation Network Design. *Pesquisa Operacional*, 375-397.

- Crevier, B., Cordeau, J.-F., & Laporte, G. (2007). The multi-depot vehicle routing problem with inter-depot routes. *European Journal of Operational Research*, 176(2), 756–773.
- Dantzig, G., & Ramser, J. (1959). The Truck Dispatching Problem. *Management Science*, 80-91.
- Daskin, M. S. (1995). *Network and Discrete Location: Models, Algorithms, and Applications*. Illinois: John Wiley & Sons.
- Dawe, R.L. (1995). Reengineer warehousing. *Transportation and Distribution*, 36(1), pp. 98-102.
- De Koster, R., Le-Duc, T. and Roodbergen, K.J. (2007). Design and Control of Warehouse Order Picking: A literature Review. *European Journal of Operational Research*, 182, pp. 481-501.
- Ding, J.F. (2013). Applying an integrated fuzzy MCDM method to select hub location for global shipping carrier-based logistics service providers. *WSEAS Transactions on Information Science and Applications*, 10(2): 47–57.
- Dominguez-Martin, B., Rodriguez-Martin, I., & Salazar-Gonzales, J.-J. (2017). The Driver and Vehicle Routing Problem. *Computers & Operations Research*.
- Dubke, A.F. & Pizzolato, N.D. (2011). Location Model of Specialized Terminals for Soybean Exports in Brazil. *Pesquisa Operacional*, 31(1): 21–40.
- El-Sherbeny, N. A. (2010). Vehicle Routing With Time Windows: An Overview of Exact, Heuristic, and Metaheuristic Methods. *Journal of King Daud University*, 123-131.

- Farahani R.Z., Seifi M.S. & Asgari N. (2010). Multiple Criteria Facility Location Problems: A survey *Applied Mathematical Modelling*, 34(7): 1689–1709.
- Frazelle, E. H. (2002). *World-Class Warehousing and Material Handling*, McGrawHill, New York.
- Gao M & Dong M. (2012). Analysis of Logistics Center Location-Selecting Based on GIS-Take Li County as an Example. *Advanced Materials Research*, 569: 804–807.
- Hatton, G. (1990). Designing a Warehouse or Distribution Centre. *In: The Gower Handbook of Logistics and Distribution*, 4 th ed., edited by Gattorna, J.L., Gower, Aldershot, pp. 175-193.
- Hyung-Sik Nam & Dong-Wook Song (2011). Defining Maritime Logistics Hub and Its Implication for Container Port, *Maritime Policy & Management: The flagship journal of international shipping and port research*, 38:3, 269-292, DOI: 10.1080/03088839.2011.572705
- Kliniewicz J.G. (1998). Hub Location in Backbone/Tributary Network Design: A Review. *Location Science*, 6(1-4): 307–35.
- Lenstra, J. K., & Rinnoy Kan, A. H. (1981). Complexity of Vehicle Routing and Scheduling Problems. *Networks*, 221-227.
- Li, X., (2014), “Operations Management of Logistics and Supply Chain: Issues and Directions Review”, *Discrete Dynamics in Nature and Society*, 1-7.
- Li Y, Liu X & Chen Y. (2011). Selection of Logistics Center Location Using Axiomatic Fuzzy Set and TOPSIS Methodology in Logistics Management. *Expert Systems with Applications*, 38(6): 7901–7908.

- Lium A-G, Crainic T.G & Wallace S.W. (2009). A Study of Demand Stochasticity in Service Network Design. *Transportation Science*, 43(2): 144–157.
- Matopoulos, A., & Papadopoulou, E.-M. (2010). The Evolution of Logistics Service Providers and the Role of Internet-based Applications in Facilitating Global Operations. *Enterprise Networks and Logistics for Agile Manufacturing*, 297–310. doi:10.1007/978-1-84996-244-5_14.
- Melo M.T., Nickel S. & Saldanha-Da-Gama F. (2009). Facility location and supply chain management– A review. *European Journal of Operational Research*, 196(2): 401–412.
- Min, H. (1989). The Multiple Vehicle Routing Problem with Simultaneous Delivery and Pick-up Points. *Transportation Research Part A*, 377-386.
- Mirchandi, P. B., & Francis, R. L. (1994). Discrete Location Theory. *Networks*, 124-125.
- Montoya, A., Gueret, C., Mendoza, J. E., & Villegas, J. G. (2017). The Electric Vehicle Routing Problem with Nonlinear Charging Function. *Transportation Research Part B*, 1-24.
- Murphy, P R & Poist, R F. (1998). Third-Party Logistics Usage: An Assessment of Propositions Based On Previous Research.
- Oktal H. & Ozger A. (2013). Hub Location in Air Cargo Transportation: A case study. *Journal of AirTransportManagement*, 27: 1–4.
- Ozbaygin, G., Karasan, O. E., Savelsbergh, M., & Yaman, H. (2017). A branch-and-price algorithm for the vehicle routing problem with roaming delivery locations. *Transportation Research Part B*, 115-137.

- Prihantoro, C.R., (2012), *Konsep Pengendalian Mutu*, PT Remaja Rosdakarya, Bandung.
- Rouwenhorst, B., Reuter, B., Stockrahm, V., Van Houtum, G., Mantel, R., & Zijm, W. (2000). Warehouse design and control: Framework and literature review. *European Journal of Operational Research*, 122(3), pp. 515-533.
- Salim, Z., (2015), *Kesiapan Indonesia Menuju Pasar Tunggal dan Basis Produksi Asean: Sektor Jasa Logistik*, LIPI Press, Jakarta.
- Simchi-Levi, David., Kaminsky, Philip., Simchi-Levi, Edith. (2000), *Designing and Managing The Supply Chains Concepts, Strategies and Case Studies*, McGraw-Hill, Int. Edition
- Škrinjar J.P, Rogić, K & Stancović, R. (2012). Location of urban logistic terminals as hub location problem. *Promet – Traffic – Traffico*, 24(5): 433–440.
- Tu C-S, Chen K-K, Chang C-T & Lu H-A. (2010). Applying an AHP – QFD conceptual model and zero-one goal programming to requirement-based site selection for an airport cargo logistics center. *International Journal of Information and Management Sciences*, 21(4): 407–430.
- Vieira, C. L., & Luna, M. M. (2016). Models and Methods for Logistics Hub Location: A Review Towards Transportation Networks Design. *Pesquisa Operacional*, 36(2): 375-397.
- Weber, A. (1909), *Über den Standort der Industrien*, – translated as Alfred Weber's *Theory of Location of Industries*, University of Chicago Press, Chicago, 1929.

