

DAFTAR PUSTAKA

- Abrar-Ul-Haq, M., Jali, M. R. M., & Islam, G. N. (2015). Factors Affecting Small and Medium Enterprises (SMES) Development in Pakistan. *American-Eurasian J. Agric. & Environ. Sci.*, 15(4), 546–552. <https://doi.org/10.5829/idosi.ajeaes.2015.15.4.12572>
- Adane, A., & Bewket, W. (2021). Effects of quality coffee production on smallholders' adaptation to climate change in Yirgacheffe, Southern Ethiopia. *International Journal of Climate Change Strategies and Management*, 13(4–5), 511–528. <https://doi.org/10.1108/IJCCSM-01-2021-0002>
- Andrássyová, Z., Žarnovský, J., Álló, Š., & Hrubec, J. (2013). Seven new quality management tools. *Advanced Materials Research*, 801, 25–33. <https://doi.org/10.4028/www.scientific.net/AMR.801.25>
- Ansar, Sukmawaty, Murad, Muttalib, S. A., Putra, R. H., & Abdurrahim. (2021). Design and performance test of the coffee bean classifier. *Processes*, 9(8), 1–11. <https://doi.org/10.3390/pr9081462>
- Asy' Ari Hasbullah, U. H., & Rini Umiyati, D. (2021). Antioxidant Activity and Total Phenolic Compounds of Arabica and Robusta Coffee at Different Roasting Levels. *Journal of Physics: Conference Series*, 1764(1). <https://doi.org/10.1088/1742-6596/1764/1/012033>
- Aziza, N., & Setiaji, F. B. (2020). Pengendalian Kualitas Produk Mebel Dengan Pendekatan Metode New Seven Tools. *Teknika: Engineering and Sains Journal*, 4(1), 27. <https://doi.org/10.51804/tesj.v4i1.791.27-34>
- Carocho, M., Morales, P., & Ferreira, I. C. F. R. (2015). Natural food additives: Quo vadis? *Trends in Food Science and Technology*, 45(2), 284–295. <https://doi.org/10.1016/j.tifs.2015.06.007>
- Chandradevi, A., & Puspitasari, N. B. (2016). Analisa pengendalian kualitas produksi Botol X 500 ml pada PT. Berlina, Tbk dengan menggunakan Metode New Seven Tools. *Industrial Engineering Online Journal*, 5(4), 1–9. <https://ejournal3.undip.ac.id/index.php/ieoj/article/view/14114>
- Cong, S., Dong, W., Zhao, J., Hu, R., Long, Y., & Chi, X. (2020). Characterization of the lipid oxidation process of robusta green coffee beans and shelf life prediction during accelerated storage. *Molecules*, 25(5). <https://doi.org/10.3390/molecules25051157>
- Costa, N. R. P., Pires, A. R., & Ribeiro, C. O. (2006). Guidelines to help practitioners of design of experiments. *TQM Magazine*, 18(4), 386–399. <https://doi.org/10.1108/09544780610671057>
- Dharmawan, A., Cahyo, F., & Widiotomo, S. (2018). Determining Optimum Point of Robusta Coffee Bean Roasting Process for Taste Consistency. *Pelita Perkebunan (a Coffee and Cocoa Research Journal)*, 34(1), 59–65. <https://doi.org/10.22302/iccri.jur.pelitaperkebunan.v34i1.308>
- Do Carmo, K. B., Do Carmo, J. C. B., Krause, M. R., & Peterle, G. (2020). Sensory and physiological quality of arabic coffee under different fermentation times [Qualidade sensorial e fisiológica do café arábica sob diferentes tempos de fermentação].

- Bioscience Journal*, 36(2), 429–438. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85079514634&doi=10.14393%2FBJ-v36n2a2020-43255&partnerID=40&md5=6a1d85f0c46afe95447b477dbec0a994>
- Ekmekci, I., & Nebati, E. E. (2019). Triz Methodology and Applications. *Procedia Computer Science*, 158, 303–315. <https://doi.org/10.1016/j.procs.2019.09.056>
- Evangelista, S. R., Silva, C. F., Miguel, M. G. P. da C., Cordeiro, C. de S., Pinheiro, A. C. M., Duarte, W. F., & Schwan, R. F. (2014). Improvement of coffee beverage quality by using selected yeasts strains during the fermentation in dry process. *Food Research International*, 61, 183–195. <https://doi.org/10.1016/j.foodres.2013.11.033>
- Fadai, N. T., Melrose, J., Please, C. P., Schulman, A., & Van Gorder, R. A. (2017). A heat and mass transfer study of coffee bean roasting. *International Journal of Heat and Mass Transfer*, 104, 787–799. <https://doi.org/10.1016/j.ijheatmasstransfer.2016.08.083>
- Gadd, K. (2011). TRIZ for Engineers: Enabling Inventive Problem Solving. In *TRIZ for Engineers: Enabling Inventive Problem Solving*. <https://doi.org/10.1002/9780470684320>
- Gamage, S. K. N., Ekanayake, E. M. S., Abeyrathne, G. A. K. N. J., Prasanna, R. P. I. R., Jayasundara, J. M. S. B., & Rajapakshe, P. S. K. (2020). A review of global challenges and survival strategies of small and medium enterprises (SMEs). *Economies*, 8(4), 1–24. <https://doi.org/10.3390/ECONOMIES8040079>
- Ginting, R., & Wibowo, C. (2020). Proposed Improvement of Flour Quality by using New Seven Tools Method (Case Study : XYZ Company). *IOP Conference Series: Materials Science and Engineering*, 1003(1). <https://doi.org/10.1088/1757-899X/1003/1/012029>
- Girma Adugna, B. (2021). Review on Coffee Production and Quality in Ethiopia. *Agriculture, Forestry and Fisheries*, 10(6), 208. <https://doi.org/10.11648/j.aff.20211006.11>
- Gómez-Gómez, O. R., Guatemala-Morales, G. M., García-Sandoval, J. P., & Arriola-Guevara, E. (2020). Cascade Control of Coffee Roasting Degree in a Spouted Bed Batch Process Based on a Real-Time Imaging Analysis. *Mathematical Problems in Engineering*, 2020. <https://doi.org/10.1155/2020/3202146>
- Haile, M., & Kang, W. H. (n.d.). *The Harvest and Post-Harvest Management Practices ' Impact on Coffee Quality*. 1–18.
- Hamdani, J., & Wirawan, C. (2012). Open Innovation Implementation to Sustain Indonesian SMEs. *Procedia Economics and Finance*, 4(Icsmed), 223–233. [https://doi.org/10.1016/s2212-5671\(12\)00337-1](https://doi.org/10.1016/s2212-5671(12)00337-1)
- Hamid, S., & Purnamasari, P. (2020). Analysis Marketing Strategy of Coffee Luwak Cikole; A Case Study. *Business Innovation and Entrepreneurship Journal*, 2(4), 205–211. <https://doi.org/10.35899/biej.v2i4.175>
- Han, J. W., Ruiz-Garcia, L., Qian, J. P., & Yang, X. T. (2018). Food Packaging: A Comprehensive Review and Future Trends. *Comprehensive Reviews in Food Science and Food Safety*, 17(4), 860–877. <https://doi.org/10.1111/1541-4337.12343>

- Harahap, R. H., Rasmikayati, E., Saefudin, B. R., Pane, T. C., & Khaliqi, M. (2019). *Analysis of Value Chain Model on Small and Medium Enterprises (SMEs): A Case Study of Coffee Shops in Bandung*. *Analysis of Value Chain Model on Small and Medium Enterprises (SMEs): A Case Study of Coffee Shops in Bandung*. <https://doi.org/10.1088/1757-899X/505/1/012098>
- Hardono, J., Pratama, H., & Friyatna, A. (2019). Analisis Cacat Produk Green Tyre dengan Pendekatan Seven Tools. *Jurnal INTECH Teknik Industri Universitas Serang Raya*, 5(1), 1. <https://doi.org/10.30656/intech.v5i1.1462>
- Hodzic, D., Hodzic, A., & Bajramovic, E. (2019). Latin square experiment design in R. *IOP Conference Series: Materials Science and Engineering*, 477(1). <https://doi.org/10.1088/1757-899X/477/1/012019>
- Indriati, A., Hidayat, D. D., Andriansyah, C. E., Rahayuningtyas, A., & Sudaryanto, A. (2020). Changes Of Some Engineering Properties Of Coffee Beans Due To Roasting Process. *Asian Journal of Applied Sciences*, 8(1), 12–21. <https://doi.org/10.24203/ajas.v8i1.6055>
- Juwita, O., Arifin, F. N., & Dewi, F. (2018). *The Online Marketing Strategic Planning for Jember Coffee SMEs*. 2(1), 14–20.
- Khajeh, M. (2009). Optimization of microwave-assisted extraction procedure for zinc and copper determination in food samples by Box-Behnken design. *Journal of Food Composition and Analysis*, 22(4), 343–346. <https://doi.org/10.1016/j.jfca.2008.11.017>
- Konda, R., Rajurkar, K. P., Bishu, R. R., Guha, A., & Parson, M. (1999). Design of experiments to study and optimize process performance. *International Journal of Quality and Reliability Management*, 16(1), 56–71. <https://doi.org/10.1108/02656719910226914>
- Kreuml, M. T. L., Majchrzak, D., Ploederl, B., & Koenig, J. (2013). Changes in sensory quality characteristics of coffee during storage. *Food Science and Nutrition*, 1(4), 267–272. <https://doi.org/10.1002/fsn3.35>
- Legesse, A. (2022). Climate Change Effect on Coffee Yield and Quality: A Review. *Food Science and Quality Management*, 5(4), 1–9. <https://doi.org/10.7176/fsqm/113-01>
- Mentzer, J. T., Stank, T. P., & Esper, T. L. (2008). Supply Chain Management and Its Relationship To Logistics, Marketing, Production, and Operations Management. *Journal of Business Logistics*, 29(1), 31–46. <https://doi.org/10.1002/j.2158-1592.2008.tb00067.x>
- Mihăilescu, M., Negrea, A., Ciopec, M., Negrea, P., Duțeanu, N., Grozav, I., Svera, P., Vancea, C., Bărbulescu, A., & Dumitriu, C. Ștefan. (2021). Full factorial design for gold recovery from industrial solutions. *Toxics*, 9(5), 1–17. <https://doi.org/10.3390/toxics9050111>
- Muhammad Zakki. (2021). Total Quality Management: a Study of Processing the Quality of 99 Brand Coffee Product. *Journal of Islamic Economics Perspectives*, 3(1), 32–44. <https://doi.org/10.35719/jiep.v3i1.37>
- Musa, B. P., Charnia, I. R., & Salma, S. (2019). The effect of temperature and duration

- roasting of the physical characteristics of arabica coffee. *Materials Science Forum*, 967 MSF(2), 113–117. <https://doi.org/10.4028/www.scientific.net/MSF.967.113>
- Musdholifah, M., Hartono, U., & Harti, H. (2020). *The Strategy of Product Quality Improvement on Small Business Coffee Sales Performance*. 390(Icracos 2019), 81–84. <https://doi.org/10.2991/icracos-19.2020.16>
- Mustafida, R., Fauziah, N. N., & Kurnia, Z. N. (2021). The Development of Islamic Crowdfunding in Indonesia and Its Impact towards SMEs. *Hasanuddin Economics and Business Review*, 4(3), 20. <https://doi.org/10.26487/hebr.v4i3.2547>
- Muttaqin, B. I. A. (2019). Telaah Kajian dan Literature Review Design of Experiment (DoE). *Journal of Advances in Information and Industrial Technology*, 1(1), 33–40. <https://doi.org/10.52435/jaiit.v1i1.10>
- Nešić, A., Cabrera-Barjas, G., Dimitrijević-Branković, S., Davidović, S., Radovanović, N., & Delattre, C. (2020). Prospect of polysaccharide-based materials as advanced food packaging. *Molecules*, 25(1). <https://doi.org/10.3390/molecules25010135>
- Ng, H. S., & Kee, D. M. H. (2017). Entrepreneurial SMEs Surviving in the Era of Globalisation: Critical Success Factors. *Global Opportunities for Entrepreneurial Growth: Coopetition and Knowledge Dynamics within and across Firms*, 75–90. <https://doi.org/10.1108/978-1-78714-501-620171007>
- Prabowo, R., & Wijaya, S. (2020). Integrasi New Seven Tools dan TRIZ (Theory of Inventive Problem Solving) untuk Pengendalian Kualitas Produk Kran (Studi Kasus: PT. Ever Age Valves Metals – Wringinanom, Gresik). *Jurnal Teknik Industri*, 10(1), 22–30. <https://doi.org/10.25105/jti.v10i1.8386>
- Pramono, S. N. W., Ulkhaq, M. M., Rachmadina, D. P., Trianto, R., Rachmadani, A. P., Wijayanti, W. R., & Dewi, W. R. (2018). The use of quality management techniques: The application of the new seven tools. *International Journal of Applied Science and Engineering*, 15(2), 105–112. [https://doi.org/10.6703/IJASE.201810_15\(2\).105](https://doi.org/10.6703/IJASE.201810_15(2).105)
- Ranga, S., Jaimini, M., Sharma, S. K., Chauhan, B. S., & Kumar, A. (2014). A Review on Design OF Experiments (DOE). *International Journal of Pharmaceutical and Chemical Sciences*, 3(1), 216–224. <http://www.ijpcsonline.com/files/34-781.pdf>
- Ribeiro, F. C., Borém, F. M., Giomo, G. S., De Lima, R. R., Malta, M. R., & Figueiredo, L. P. (2011). Storage of green coffee in hermetic packaging injected with CO₂. *Journal of Stored Products Research*, 47(4), 341–348. <https://doi.org/10.1016/j.jspr.2011.05.007>
- Ridwan, F., & Novison, R. (2018). Characterization of Roasted Coffee Aroma by Optimizing Roaster Parameters. *Borneo Journal of Resource Science and Technology*, 8(1), 23–29. <https://doi.org/10.33736/bjrst.821.2018>
- Riyanto, S., Muchlisiyah, J., & Arafat, S. (2019). Improvement of “Premium Coffee” Production in SRIDONORETNO Association of Dampit District, Malang. *Prosiding Seminar*, 51. <https://doi.org/10.32503/prosidingseminar.v0i0.7>
- Ruosi, M. R., Cordero, C., Cagliero, C., Rubiolo, P., Bicchi, C., Sgorbini, B., & Liberto, E. (2012). A further tool to monitor the coffee roasting process: Aroma composition and chemical indices. *Journal of Agricultural and Food Chemistry*, 60(45), 11283–11291.

<https://doi.org/10.1021/jf3031716>

- Saloko, S., Sulastri, Y., Murad, & Rinjani, M. A. (2019). The effects of temperature and roasting time on the quality of ground Robusta coffee (*Coffea robusta*) using Gene Café roaster. *AIP Conference Proceedings*, 2199(December).
<https://doi.org/10.1063/1.5141310>
- Sirikasemsuk, K. (2018). Measure of overall regression sum of squares of symmetric randomized complete block design with a lost observation. *International Journal of Engineering and Technology(UAE)*, 7(2), 50–53.
<https://doi.org/10.14419/ijet.v7i2.3.9967>
- Sunday, A., & Ariyo, A. (2017). *Entrepreneurial Strategies and Small and Medium Scale Enterprises (SMEs) Development in Ogun State , Nigeria. 1*(1), 34–38.
<https://doi.org/10.11648/j.ipa.20170101.15>
- Swee, N. S. L., Toh, G. G., Yip, M. W., Keong, C. S., & Tai, S. C. (2017). Applying Triz for Production Quality Improvement. *MATEC Web of Conferences*, 95, 2–5.
<https://doi.org/10.1051/mateconf/20179510009>
- Syafriandi, Fachruddin, F., Lubis, A., Maulina, H., & Nazura, P. (2021). Testing coffee roasting machine with electric heater as energy source. *IOP Conference Series: Earth and Environmental Science*, 922(1). <https://doi.org/10.1088/1755-1315/922/1/012073>
- Tesfa, M. (2019). Review on Post-Harvest Processing Operations Affecting Coffee (*Coffea Arabica* L.) Quality in Ethiopia. *Journal of Environment and Earth Science*, 9(12), 30–39. <https://doi.org/10.7176/jees/9-12-04>
- Vogt, M. A. B. (2020). Developing stronger association between market value of coffee and functional biodiversity. *Journal of Environmental Management*, 269(December 2019), 110777. <https://doi.org/10.1016/j.jenvman.2020.110777>
- Widyantini, R. (2019). Analysis of The Competitiveness of Indonesian Coffee in The Export Market. *Cendekia Niaga*, 3(1), 14–23. <https://doi.org/10.52391/jcn.v3i1.458>
- Winch, G. W., Bianchi, C., & Winch, G. W. (2006). *Drivers and dynamic processes for SMEs going global*. <https://doi.org/10.1108/14626000610645324>
- Wisnubroto, P., & Rukmana, A. (2015). Pengendalian Kualitas Produk Dengan Pendekatan Six Sigma Dan Analisis Kaizen Serta New Seven Tools Sebagai Usaha Pengurangan Kecacatan Produk. *Jurnal Teknologi*, 8(1), 65–74.
- yoshinobu nayatani, toru eiga, ryoji futami & hiroyuki miyagawa. (1994). the Seven Qc Tools:New Tools for New Era. *The Practitioner'S Quality Toolbox*, 101–109.
- Zarebska, M., Stanek, N., Barabosz, K., Jaszkiwicz, A., Kulesza, R., Matejuk, R., Andrzejewski, D., Biłos, Ł., & Porada, A. (2022). Comparison of chemical compounds and their influence on the taste of coffee depending on green beans storage conditions. *Scientific Reports*, 12(1), 1–12. <https://doi.org/10.1038/s41598-022-06676-9>
- Zuhri, S., Ilyas, Winanda, M., & Izzaty, N. (2020). Taguchi method application to improve the quality of coffee pulp screen printing products.

LAMPIRAN

Lampiran 1. Gambaran umum perusahaan

Anoa *coffee* merupakan perusahaan yang bergerak dalam bidang pengolahan kopi yang berdiri sejak tahun 2014 dan berlokasi di jl. Abdullah deang sirua kota makassar. Diawali dengan penjualan oleh khas makassar namun berubah menjadi usaha pengolahan kopi. Usaha pengolahan kopi yang dimiliki dan dirintis oleh bapak haeruddin ini bermula dari penjualan biji kopi mentah atau *greenbeand* yang diambil dari kampung halaman beliau dienrekang, namun karena meningkatnya permintaan pasar terhadap biji kopi yang dijual oleh anoa *coffee* maka dilakukanlah pengembangan dan inovasi penjualan dengan mencoba melakukan *roasting* kopi dengan alat seadanya menggunakan satu buah kompor dan wajan sebagai alat utama dalam melakukan proses *roasting* atau sangrai kopi secara manual. Hasil sangrai kopi kemudian digiling dipasar tradisional kemudian dikemas dengan merek anoa *coffee* dan disebar di beberapa toko oleh-oleh yang ada di makassar.

Seiring meningkatnya penjualan dari Anoa *coffee* dan semakin banyaknya usaha warkop atau *coffeeshop* maka anoa *coffee* mulai fokus dan mengembangkan produksinya dengan menggunakan mesin *roasting* agar dapat menjaga kualitas produknya dan dapat bersaing dengan usaha sejenisnya. Saat ini anoa *coffee* mampu memproduksi kopi sebanyak 50kg-70kg/hari mampu memenuhi dan mendistribusikan produknya di beberapa warkop atau *coffeeshop* yang di makassar. Dengan meningkatnya penjualan produk anoa *coffee* di makassar maka dilakukan juga penjualan secara online agar dapat merambah pasar diluar kota makassar terbukti dengan pendistribusian produk kopi di beberapa provinsi di indonesia seperti Kalimantan, Sulawesi dan Papua.

Lampiran 2. Kondisi perusahaan



Anoa *coffee* saat ini melakukan aktivitas produksinya dengan beberapa area kerja didalam satu ruangan yang berukuran 6 meter x 8 meter. Berdasarkan gambar diatas ada beberapa area kerja dan area penyimpanan berdasarkan fungsinya masing-masing, dapat dilihat denah ruangan produksi anoa *coffee* memiliki beberapa area seperti tempat penyimpanan *greenbeand*, penyimpanan kopi jadi, tempat *tools* dan packaging, meja kerja admin, meja proses packaging dan area mesin *roasting*.



Berdasarkan gambar diatas dapat dilihat kondisi tempat penyimpanan *greenbeand* dianoa *coffee*, tumpukan *greenbeand* yang tersusun kurang rapi dan belum terklasifikasi sesuai jenis *greenbeand* sehingga membutuhkan waktu untuk mengambil *greenbeand* yang akan *diroasting*. Pada tempat penyimpanan *greenbeand* dengan kondisi seperti itu dapat menyebabkan kualitas biji kopi menjadi kurang baik dan dapat menyebabkan biji kopi terserang kutu yang membuat biji kopi menjadi cacat sebelum *diroasting*.



Berdasarkan gambar diatas dapat dilihat tempat *tools* dan packging anoa *coffee*, jumlah *tools* yang cukup banyak namun hanya memiliki sedikit ruang dalam lemari penyimpanan sehingga berpotensi menyebabkan *tools* terjatuh dan dapat membuat *tools* menjadi rusak. Pada tempat *tools* dan packaging ini belum terdapat nama label pada setiap bagian penyimpanan *tools* sehingga beberapa *tools* yang telah digunakan sering kali berpindah posisi dan tak beraturan.



Berdasarkan gambar diatas dapat dilihat meja atau area admin dianoa *coffee* yang digunakan sebagai tempat untuk memproses orderan secara online dan mendesign packaging produk kopi. Area kerja admin masih bergabung dengan ruangan produksi kopi sehingga diperlukan penambahan area khusus agar admin tidak terganggu dalam bekerja dan berkas-berkas anoa *coffee* dapat tersusun dengan rapi dan aman.



Berdasarkan gambar diatas dapat dilihat kondiisi proses packaging produk anoa *coffee* yang dilakukan dimeja packaging. Proses packaging yang masih manual yang dilakukan oleh operator mulai dari menempelkan stiker pada packaging hingga penimbangan biji kopi. Kondisi ini dapat mempengaruhi kualitas biji kopi dimana biji kopi yang telah *diroasting* dapat terkontaminasi udara luar dengan waltu yang lama dan terkontaminasi sentuhan tangan dari operator.



Berdasarkan gambar diatas dapat dilihat tempat penyimpanan biji kopi yang telah diroasting, beberapa box biji kopi disusun diarea yang cukup sempit. Jumlah produksi kopi dari anoa *coffee* yang cukup banyak dalam sehari dapat mengalami hambatan apabila area penyimpanan kopi hasil *roasting* memiliki kapasitas yang terbatas.



Berdasarkan gambar diatas dapat dilihat area mesin *roasting* dianoa *coffee*. mesin *roasting* yang cukup besar dengan kapasitas 8kg ditempatkn diarea yang terbatas dapat mempengaruhi kinerja mesin *roasting* karena suhu ruang yang tidak tersirkulasi dengan baik dan pembuangan asap mesin *roasting* yang belum maksimal.

Lampiran 4. Dokumentasi proses dan perbaikan



