

PERANCANGAN ALAT PENGEMASAN TEMPE MENGGUNAKAN METODE *QUALITY FUNCTION DEPLOYMENT* (QFD)

Studi Kasus pada UMKM Chakra Jaya Cilacap

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ABSTRAK

UMKM Chakra Jaya merupakan usaha yang bergerak pada bidang pengolahan produksi tempe. Proses produksinya dilakukan 7 hari kerja dan proses produksi tempe sebanyak 3 Ton kedelai. Namun proses pengemasannya masih dilakukan secara manual dan membutuhkan waktu sebanyak 5 jam, sehingga waktu produksi menjadi tidak efektif serta menimbulkan kelelahan fisik pada karyawan. Dari data kuesioner SNQ menunjukkan bahwa keluhan terbesar terdapat pada sakit dilengan kanan atas, sakit pada bahu kanan atas dan sakit pada bokong. Sehingga perlu dilakukan usulan perancangan alat agar waktu produksi dapat berjalan dengan efektif serta dapat mengurangi keluhan fisik pada karyawan. Metode yang digunakan dalam penelitian ini adalah *Quality Function Deployment*. Mesin pengemasan tempe memiliki kapasitas produksi 20 kg dalam satu kali proses dan alat dibuat menjadi semi otomatis dengan posisi corong disesuaikan dengan posisi duduk yang lebih nyaman serta bagian penampung kedelai dibuat dari stainless. Hasil penelitian menunjukkan keefektivan waktu proses oengemasan menggunakan alat usulan selama 3 jam dari proses manual yang membutuhkan waktu 5 jam. Dan juga dilihat dari keergonomisan alat pada hasil perbandingan perhitungan rata-rata pembanding dan alat usulan bahwa nilai rata-rata presentase proses manual sebesar 44% dan nilai rata-rata presentase alat usulan sebesar 96%. Sehingga dapat dikatakan bahwa alat usulan dikatakan lebih unggul.

Kata Kunci: *Quality Function Deployment*, *Design*, Pengemasan

**DESIGN OF TEMPEH PACKAGING TOOLS USING THE QUALITY
FUNCTION DEPLOYMENT (QFD) METHOD**
Case Study on MSME Chakra Jaya Cilacap

ABSTRACT

MSME Chakra Jaya is a business that is engaged in the processing of tempeh production. The production process is carried out in 7 working days, and the tempeh production process is 3 tons of soybeans. However, the packaging process is still done manually and takes as much as 5 hours, so the production time becomes ineffective and causes physical fatigue to employees. The SNQ questionnaire data showed that the most significant complaints were a pain in the upper right arm, pain in the upper right shoulder and pain in the buttocks. So it is necessary to propose a tool design so production time can run effectively and reduce physical complaints to employees. The method used in this research is Quality Function Deployment. The tempeh packaging machine has a production capacity of 20 kg in one process, the tool is made semi-automatic with the funnel position adjusted to a more comfortable sitting position, and the soybean container is made of stainless. The study results show the effectiveness of the packaging process time using the proposed tool for 3 hours from the manual process, which takes 5 hours—and also seen from the ergonomics of the tool in the results of the comparison of the average comparison calculation and the proposed tool that the average value of the percentage of manual processing is 44%. The average value of the percentage of the proposed tool is 96%. So it can be said that the proposed tool is superior.

Keywords: Quality Function Deployment, Design, Packaging

DAFTAR PUSTAKA

- Erdil, N. O. (2018). *Quality Function Deployment : More Than a Design Tool*. *Quality Function Deployment : More than a Design Tool*.
- Faisha, M., Mohamad, E., Rahman, A. A. A., Desviane, S., Ramawan, A., Jamli, M. R., & Adiyanto, O. (2021). *Safety and Quality Improvement of Street Food Packaging Design Using Quality Function Deployment*. *International Journal of Integrated Engineering*, 13(1), 19–28. <https://doi.org/10.30880/ijie.2021.13.01.003>
- Faishal, M., Mohamad, E., Jaafar, R., Rahman, A. A., Adiyanto, O., Jatmiko, H. A., & Novera, I. (2021). *Integrated approach to customer requirement using quality function deployment and kansei engineering to improve packaging design*. *Asia-Pacific Journal of Science and Technology*, 26(2), 1–10.
- Fajri, C., & Sutrisno. (2020). *Perancangan Shelter Bus Mebidang Dengan Menggunakan Quality Function Deployment (QFD)*. *Jurnal Sistem Teknik Industri*, 22(1), 77–89. <https://doi.org/10.32734/jsti.v22i1.3630>
- Fongsatitkul, T., & Bohez, E. L. J. (2019). *Application of a QECN-QFD to Design an Environmentally-Friendly One-Handed Lipstick Packaging*. *Engineering Journal of Research and Development*, 30(3), 121–134. <https://www.tci-thaijo.org/index.php/eit-researchjournal/article/view/191449>
- Harahap, M. F. B., Mubarak, A., & Suzianti, A. (2020). *Designing a Green Food Delivery Packaging with QFD for Environment (QFDE) and TRIZ*. *IOP Conference Series: Earth and Environmental Science*, 464(1). <https://doi.org/10.1088/1755-1315/464/1/012004>
- Koleini Mamaghani, N., & Barzin, E. (2019). *Application of Quality Function Deployment (QFD) to improve product design quality in school furniture*. *Int. J. Architect. Eng. Urban Plan*, 29(2), 277–287. <https://doi.org/10.22068/ijaup.29.2.277>
- Lukaszewicz, A., Panas, K., & Szczebiot, R. (2018). *Design process of technological line for vegetables packaging using cax tools*. *Engineering for Rural Development*, 17, 871–876. <https://doi.org/10.22616/ERDev2018.17.N494>
- Masruri, A., Saleh, Z., Satria, Z., & Hastarina, M. (2019). *Perancangan Mesin Pencacah Plastik Skala Laboratorium Dengan Metode Quality Function Deployment (QFD) The Design of Shredder Machine for Laboratory Scale using Quality Function Deployment Method*. 38–41.
- Mentari, S., Ainuri, M., & Falah, M. A. F. (2022). *Packaging development of dehydrated strawberry using quality function deployment for e-commerce*.

IOP Conference Series: Earth and Environmental Science, 980(1), 012034.
<https://doi.org/10.1088/1755-1315/980/1/012034>

Mesin, P., Sampah, C., Dan, O., Yang, O., Berbasis, O., Dengan, E., Qfd, M., & Antropometri, D. A. N. (2021). Perancangan mesin cacah sampah organik dan non- organik yang otomatis berbasis ergonomis dengan metode QFD dan antropometri. *Ciastech*, 493–502.

Nur, N., & Sari, A. (2021). Perancangan Alat Pemotong Tahu Menggunakan Metode Qfd (Quality Function Deployment) Dengan Pendekatan Antropometri.

Pulungan, M. H., Nadira, N., & Dewi, I. A. (2018). *Re-design of apple pia packaging using quality function deployment method. IOP Conference Series: Earth and Environmental Science*, 131(1). <https://doi.org/10.1088/1755-1315/131/1/012030>

Purwanto, A. (2020). *Design of Food Product Using Quality Function Deployment in Food Industry. Journal Industrial Engineering and Management Research (JIEMAR)*, 1(1), 1–16.

Theodossy Tigang Huvat, T. (n.d.). Perancangan Alat Panggangan Otomatis Menggunakan Metode QFD (*Quality Function Deployment*). *Jurnal Teknologi*, 12, 123–129.

Vezzetti, E., Moos, S., & Kretli, S. (2011). *A product lifecycle management methodology for supporting knowledge reuse in the consumer packaged goods domain. CAD Computer Aided Design, Journal Management*: 43(12), 1902–1911. <https://doi.org/10.1016/j.cad.2011.06.025>

Weijie, J. (2020). *Research and Application of Mechanical Product Design Process Based on QFD and TRIZ Integration. Journal of Physics: Conference Series*, 1544(1). <https://doi.org/10.1088/1742-6596/1544/1/012088>