



19. HenceForth

Product Name: *Kangaeroo*

1. Executive Summary

As the demand for sustainable practices has increased by 50% from 2021, 71% of more than 11,500 global consumers are making changes to their lifestyles and the products they buy to live more sustainably. [1] 'Greenwashing' has increased as consumers increasingly seek to buy environmentally sound products. In the current state, 21% of consumers question the credibility of the sustainability claims made by companies and are concerned about greenwashing. This is supported by numerical evidence, as the European Commission reported that out of 344 seemingly dubious claims investigated, 37% of the claim included vague and general statements such as "conscious", "eco-friendly", and "sustainable". [2] To tackle this issue, a proposed greenwashing detection application by incorporating AI technology to identify the ecological aspects of groceries, so consumers can make informed choices of their chosen items.

2. Our mission

Kangaeroo aims to empower consumers with accurate information on product sustainability while adding a touch of humor and interactivity to the shopping experience. Through the integration of advanced AI technology, our innovative robot, strategically placed on the handle of shopping carts, objectively analyzes product ingredients, packaging, and marketing claims in real time.

We provide consumers with a spectrum of green (no greenwashing or truly eco-friendly) to red (greenwashing) indicators while engaging in witty banter along the way. When unrealistic or inappropriate claims or marketing tactics are detected, the robot boldly reveals products on the red side of the spectrum. Our goal is to foster transparency and objectivity, preventing the prevalence of greenwashing and SDGswashing in the marketplace.

3. Our product

Kangaeroo, our interactive robot, follows six sequential steps to assist the consumer in determining whether or not a product is capitalizing on "Greenwashing". The steps are as follows below;



1) Barcode Scanning: Once the barcode of the chosen product is placed in front of the scanner, the in-built laser beam is directed onto the barcode, and the reflected light is detected by the sensor, which interprets the dark and light bars, decoding the code, and identifying the product information. On the *KangaePouch* system, the identified product is searched within the system, allowing the system to list the ingredients, materials, and compositions inside the selected product on the display screen.

2) Product Showcase: The consumer then showcases the product to the eyes of the robot for 15 seconds. During the 15 seconds, the high-resolution camera will capture detailed images of the product surface. [3] With *Kangaeroo's* motorized ability of zoomed lens, *Kangaeroo* will be able to adjust its focal length to zoom in and out according to the magnification of the captured images. The true magic lies in Digital Zoom, however, which would allow *Kangaeroo* to magnify specific areas of interest, which have been trained to it. Such as Forests, Trees, Leaves, Water, the Sun, or anything resembling a natural or sustainable resource.

3) Analysis: Image Interpretation: Based on the images captured, *Kangaeroo* includes an Image Processing Software, which identifies and analyzes the specific patterns, colors, designs, and images based on an algorithm which *Kangaeroo* is trained in using [4] Convolutional Neural Networks (CNNs). Thanks to its prior training, *Kangaeroo* can identify and understand the object on the packaging. **Text Interpretation:** Not only that, text plays a major role in the Greenwashing market, hence using the captured images, *Kangaeroo* runs an [5] Optical Character Recognition system to extract texts and keywords. It would also translate these texts into machine-readable text characters. It conducts tokenization, to ensure that punctuation, special characteristics, and stopwords are removed for its understanding. To ensure accuracy, *Kangaeroo* pre-processes the image to do noise reduction, contrast enhancement, and image binarization to separate text from the background. *Kangaeroo*, once understood the text, runs a Keyword Extraction and [6] Sentiment Analysis to determine important terms and tone behind the words.

4) Red vs. Green Zone Determination: *Kangaeroo* is trained to make its judgment based on a "Red" vs "Green" zone. Its advanced analysis skills allow it to scale a product into either of the zones. **Claim Identification:** *Kangaeroo* is trained to consider terms such as "all", "completely" etc. in the Red Zone. If

using OCR, it detects such vocabulary, which is Henceforth named "Big Claims", *Kangaeroo* will count it as 1 Red Flag found. **Frequency Analysis:** If a product uses what we named, "Fluff Words", more than its threshold setting, *Kangaeroo* will count it as 1 Red Flag found. *Kangaeroo* counts the frequency of each word in the text and identifies if the word goes beyond its threshold setting (which is set up by us). **Pattern Recognition:** *Kangaeroo* recognizes what we named, "Gobbledygook words", defined by Henceforth. If *Kangaeroo* matches a "Gobbledygook Word" such as "Synergistic", but does not match any other words related to this, such as "substances", "agents" or "interaction", it will conclude that this is merely a word used for marketing, with no explanation. Hence, it will count as 1 Red Flag found.

5) Alert Zone When *Kangaeroo* recognizes any images/colors that are frequently used for Greenwashing marketing, such as Forests, Leaves using the CNN model, it will count it in the "Alert Zone". **Natural Language Processing:** Based on the product identification using the barcode in the beginning, the access to the ingredients, and the Keyword analysis conducted, it will find any contradictions between the ingredients (in the database) and claims made in the product packaging. Our comparison algorithm has a set of criteria for determining a match (exact, partial, synonym, and fuzzy match). With information reports supporting our algorithm, a word such as "natural" in a claimed diaper packaging for example, would have a "fuzzy" match if it collides with one of the materials of the diaper being polypropylene (which is a plastic polymer). Hence, *Kangaeroo* will count it in the "Alert Zone".

6) Interaction with Consumers: After conducting such analysis, which would all occur in a short time, *Kangaeroo* will interact with the customer, stating all the "Red Flags" and "Alert Zones" it detected. Expect, to increase user engagement and encourage user participation, *Kangaeroo* is trained to communicate playfully and humorously! Anytime, *Kangaeroo* counts a Red Flag or Alert Zone, *Kangaeroo's* vocabulary and sentence formation have been structured through Machine Learning [7] (or Generative Pre-trained Transformer) on a previously collected dataset. *Kangaeroo* would vocally communicate the main summarized red and alert zones it detects, while on the *KangaePouch*, the user will be able to read. To help personalize the experience for the user, *Kangaeroo* can store transcripts, metadata, and analysis for each session. This is due to data logging, and algorithms developed which allow *Kangaeroo* to interpret the logged data in the right context.

Target market/strategy

Our target customers are consumers who are willing to purchase sustainable products. Our target industry is a supermarket grocery store that sells products and uses carts. Our products act as an extension on usual carts. This allows the product to be low-cost and lowers the hurdle to be introduced. We use penetration pricing methods to allow fast dissemination of the production and acquire more market share. The usage of robotics, and AI allows us to attract consumers and gives the consumer a chance to critically see the products and the company in terms of eco and SDGs.

4. Finance

We used penetrative pricing for our finance strategy, prioritizing our market share. Hence the product price increases over time. Due to mass production, the average cost of the product decreases over time. Staff salaries and marketing costs increase as we expand our business for system maintenance and further expansion of the business.

(YEN)	Year 1	Year 2	Year 3	Year 5	Year 10	Year 20
1. Revenue	1,000,000	5,000,000	10,000,000	50,000,000	100,000,000	500,000,000
Unit average price	10,000	10,000	10,000	10,000	10,000	10,000
units sold	100	500	1000	5,000	10,000	50,000
2. Production cost	400,000	2,000,000	3,000,000	15,000,000	25,000,000	125,000,000
unit average cost	4,000	4,000	3,000	3,000	2,500	2,500
3. Expenses	8,200,000	8,250,000	1,650,000	18,700,000	40,300,000	57,400,000
Staff salaries	8,000,000	8,000,000	1,200,000	18,000,000	30,000,000	42,000,000
Sales and Marketing	100,000	150,000	300,000	500,000	10,000,000	15,000,000
other expenses	100,000	100,000	150,000	200,000	300,000	400,000
4. Profit/loss before tax	-7,600,000	-5,250,000	5,350,000	16,300,000	34,700,000	317,600,000
5. Income tax	0	0	1,070,000	3,843,000	10,819,000	138,124,000
6. Net profit/loss	-7,600,000	-5,250,000	4,280,000	12,457,000	23,881,000	179,476,000
7. Start up cost	7,000,000	0	0	0	0	0
8. Free cash flow	-14,600,000	-5,250,000	4,280,000	12,457,000	23,881,000	179,476,000
9. Funding requirements	2,000,000	0	0	0	0	0
10. Loan required	2,000,000	0	0	0	0	0
11. Payment of loan	0	0	2,000,000	0	0	0
12. Dividend of shareholders	0	0	856,000	2,491,400	4,776,200	35,896,200
13. Cash Balance	-10,600,000	-5,250,000	1,424,000	9,965,600	19,104,800	143,580,800

5. Conclusion

With *Kangaeroo*, we guide consumers towards eco-friendly choices and contribute to a more environmentally conscious world. The innovation of AI detection robots has the potential to enhance valuable shopping experiences that are not only informative but also entertaining and meaningful.

6. References

[1] <https://www.simon-kucher.com/en/insights/2022-global-sustainability-study-growth-potential-environmental-change>
 [2] https://ec.europa.eu/commission/presscorner/detail/en/ip_21_269
 [3] https://link.springer.com/referenceworkentry/10.1007/0-387-30038-4_56
 [4] <https://www.ibm.com/topics/convolutional-neural-networks>
 [5] <https://www.ibm.com/blog/optical-character-recognition/>
 [6] <https://aws.amazon.com/what-is/sentiment-analysis/>
 [7] https://www.nri.com/jp/knowledge/glossary/lst/alphabet/gpt_3