Critique Document

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The goal of the UX improvement was to reduce the cognitive effort required for users to understand their investment performance in Crypto-Dash by introducing color-coded profit and loss indicators on each cryptocurrency card. While the design achieved substantial improvements in efficiency, clarity, and usability, several areas emerged that require deeper critical reflection.

1. Strengths of the UX Improvement

Significant Reduction in Cognitive Load

The most successful outcome was the dramatic drop in cognitive effort users needed to evaluate their portfolio. The switch from numeric comparison to pre-attentive visual cues (green vs. red borders) supported Norman's principle of reducing the Gulf of Evaluation. Test results demonstrated a **92.3% decrease in time** required to identify profitable holdings, confirming that the design supported rapid recognition rather than deliberate calculation.

Strong Alignment with Usability Heuristics

The new feature aligns well with several of Nielsen's heuristics:

- **Visibility of system status:** Users receive immediate visual feedback.
- **Recognition over recall:** The system stores purchase prices, removing memory load.
- **Error prevention:** Input validation reduced incorrect entries to 0%.

Users reported higher confidence and a clearer understanding of the interface, as reflected in the **SUS score of 86.2**, indicating above-average usability.

Improved Task Efficiency

Users completed all tested tasks, including adding, editing, and evaluating purchase prices, considerably faster. This efficiency supports the idea that the interface became more intuitive and reduced unnecessary steps.

2. Weaknesses and Limitations

Dependence on Accurate User Input

Although the borders provide clear feedback, the system is still dependent on users entering their own purchase prices. If the purchase price is entered incorrectly, the border feedback becomes misleading. This reveals a limitation: the improvement strengthened the feedback layer but did not address data reliability.

Potential Over-Simplification

While the design intentionally reduces complexity, the simple green/red border system lacks nuance. For example:

- A coin could be barely profitable but still display a strong green indicator.
- A coin with high volatility may rapidly shift between profit and loss, causing inconsistent signals.
- No distinction is made between small and large profits or losses.

This raises questions about whether users may become overly dependent on the color cues without understanding the magnitude of change.

Limited Support for Long-Term Investment Decisions

Although the borders help with moment-to-moment assessment, they do not help users:

- Track historical performance
- Compare total portfolio performance
- See overall gains/losses over time

Therefore, the improvement focuses heavily on micro-interactions rather than the larger investment workflow.

Small User Sample for Testing

The cognitive walkthrough involved **only four participants**, which limits generalizability. Usability issues that may appear with:

- novice users
- expert investors
- users unfamiliar with color-coded financial systems
  might not have been detected.

A broader and more diverse testing group would strengthen the reliability of the results.

Accessibility Concerns

The design relies heavily on color as the sole indicator. Users with:

- color-blindness
- low vision
- contrast sensitivity issues
  may not receive the intended feedback.

This violates the WCAG principle of providing redundant cues. Adding icons, patterned borders, or textual indicators would improve accessibility.

3. Reflection on the Methods Used

HTA Strengths and Gaps

The Hierarchical Task Analysis successfully exposed unnecessary cognitive steps in the original workflow. However, the HTA could have been expanded to include:

- contextual factors (e.g., checking crypto on mobile during commute)
- emotional factors (stress, uncertainty in market decisions)

The design solved mechanical inefficiencies but did not fully address the emotional side of financial decision-making.

Cognitive Walkthrough

The cognitive walkthrough helped uncover practical usability issues, but it was task-oriented rather than exploratory. Participants followed the researcher's script, which may have prevented the natural discovery of other problems, such as confusion about editing vs. adding purchase prices.

4. Opportunities for Future Improvement

Add Magnitude Indicators

Instead of a single green or red border, a gradient or thickness variation could communicate:

- small vs. large profit
- stable vs. volatile price changes

Provide Portfolio-Level Insights

Users would benefit from features like:

- total portfolio profit/loss
- percentage growth over time
- daily/weekly changes

This would align Crypto-Dash with real-world investment dashboards.

Improve Accessibility

Introduce:

- icons
- labels (e.g., "+12%")
- adjustable themes
- border patterns

These additions would make the system usable for a wider audience.

Automatic Import of Purchase Data

Future integration with APIs or CSV uploads could reduce reliance on manual entry, significantly improving data accuracy and trust.

5. Conclusion

The UX improvement color-coded profit/loss borders—successfully addressed the core user pain point and significantly improved task efficiency, accuracy, and satisfaction. It effectively applied Norman's principles and Nielsen's heuristics to transform a cognitively heavy task into a visually intuitive experience.

However, several limitations remain, including accessibility concerns, dependence on manual entry, limited nuance in feedback, and a small user-testing sample. These issues highlight opportunities for continued refinement.

Overall, the improvement meaningfully advanced the usability of Crypto-Dash and laid a strong foundation for future iterations, but it should be viewed as a step in an ongoing design process rather than a complete solution.