Title of the case study: Custom-Built vs. Pre-Assembled Desktop

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Abstract:

This case study compares a pre-assembled desktop with a custom-built desktop within a budget of NPR 70,000. The pre-assembled desktop offers convenience and ready-to-use specifications, while the custom-built option provides flexibility and potential for future upgrades. The study evaluates both options based on performance, cost, and upgrade potential, and provides a final recommendation for the better choice.

A pre-assembled desktop available for NPR 69,500 with the following specifications:

• Processor: AMD Ryzen 5 5600G (integrated graphics)

• Motherboard: Gigabyte B450M

• RAM: 16GB DDR4 3200MHz (8GB x 2)

• Storage: 256GB NVMe SSD

• Monitor: 24" Koorui Full HD, 100Hz refresh rate, 1ms response time, 100% sRGB

• Power Supply: 650W 80+ Bronze certified

• Other: RGB Case with pre-installed cooling fans

EVALUATION OF PRE-ASSEBLED COMPUTER:

Strength:

• Processor (Ryzen 5 5600G): Great for everyday tasks, programming, and light gaming, thanks to its strong performance and integrated graphics.

• Motherboard (Gigabyte B450M): Reliable and budget-friendly, with support for overclocking.

• RAM (16GB DDR4 3200MHz): Perfect for multitasking, gaming, and smooth performance overall.

• Storage (256GB NVMe SSD): Super-fast boot and load times, making the system feel snappy.

• Monitor (24" Koorui Full HD): Smooth visuals with 100Hz refresh, a fast 1ms response, and vibrant colors for creative work.

• Power Supply (650W Bronze): Reliable power with room for upgrades, plus decent efficiency.

• Cooling: Pre-installed fan handles everyday cooling needs.

Limitations:

• Graphics: The integrated graphics are fine for casual use but won't handle modern AAA games or demanding graphics tasks well.

• Motherboard: Limited upgrade potential, with fewer slots for storage or expansion.

• Storage: 256GB fills up quickly if you're installing large games or software.

• Monitor: 1080p is good, but it's not ideal for 4K work or immersive experiences.

• Cooling: Stock fan is okay, but it might struggle under heavy loads or overclocking.

CUSTOM BUILT DESKTOP:

1. Processor: AMD Ryzen 5 5600G

• Price: NPR 22,500

• Description: 6 cores, 12 threads, integrated Radeon graphics.

2. Motherboard: Gigabyte B450M DS3H

• Price: NPR 10,000

• Description: Reliable micro-ATX motherboard with Ryzen support.

3. RAM: Corsair Vengeance LPX 16GB DDR4 3200MHz

• Price: NPR 7,500

• Description: High-performance RAM with excellent speed.

4. Storage: Lexar 512GB NVMe SSD

• Price: NPR 6,500

• Description: Fast storage for booting and data transfer.

5. Monitor: Dahua LM24-E231 24-inch FHD 100Hz

• Price: NPR 12,500

• Description: 24-inch Full HD monitor, smooth 100Hz refresh rate.

6. Power Supply: Xigmatek Z-Power 650W 80+ Bronze

• Price: NPR 6,000

• Description: Efficient 650W PSU with 80+ Bronze certification.

7. Case: FD3 First Player

• Price: NPR 5,000

• Description: Stylish case with proper cooling.

Total: NPR 70,000

HERE IS THE LIST OF SOURCES FROM WHERE YOU CAN BUY AND BUILD YOOUR CUSTOM DESKTOP:

- **GadgetByte Nepal** - www.gadgetbytenepal.com
- **TechLekh** - www.techlekh.com
- **NepBay** - www.nepbay.com
- **InfoTechs Nepal** - www.infotechsnepal.com
- **TechSansar** - www.techsansar.com

Parameter	Pre-Assembled Desktop	Custom-Built Desktop
Processor Performance	AMD Ryzen 5 5600G (6 cores, 12 threads, integrated graphics)	AMD Ryzen 5 5600G (6 cores, 12 threads, integrated graphics)
RAM and Storage	16GB DDR4 3200MHz (2x8GB), 256GB NVMe SSD	16GB DDR4 3200MHz (2x8GB), 512GB NVMe SSD
Monitor Features	24" Koorui FHD, 100Hz, 1ms response, 100% sRGB	24" Dahua LM24-E231 FHD, 100Hz, 5ms response, 99% sRGB
Future Upgrade Potential	Limited by proprietary components; fewer expansion options	High; uses standard components with more upgrade flexibility
Warranty and After-Sales Support	Typically 1-2 years warranty with single-point service support	Varies by component; individual warranties for each part
Final Cost	NPR 70,000 after 37% discount (original price NPR 110,000)	NPR 70,000

Final Recommendation Choice: Pre-Assembled Desktop

Justification:

1. Price Advantage: The pre-assembled desktop is heavily discounted (37% off), offering a system originally priced at NPR 110,000 for NPR 70,000. This substantial discount provides access to a higher perceived value for the price paid.

2. Convenience: The pre-assembled desktop comes ready-to-use, saving time and effort in researching, purchasing, and assembling individual components. This makes it ideal for users who want a hassle-free experience.

3. Warranty and Support: A single-point warranty and after-sales service make the pre-assembled desktop more convenient for repairs and support. There's no need to coordinate with multiple vendors for component issues.

4. Monitor Superiority: The Koorui monitor included in the pre-assembled system has a faster response time (1ms vs. 5ms) and slightly better color accuracy (100% sRGB vs. 99% sRGB), making it more suitable for gaming and professional use.

Trade-offs: While the custom-built desktop offers more storage (512GB vs. 256GB), the storage can be upgraded later in the pre-assembled system if needed. The convenience and immediate usability outweigh this minor drawback, especially for users who prioritize a plug-and-play experience. Additionally, pre-assembled systems often come with a warranty and technical support, which can be advantageous for those less familiar with troubleshooting hardware issues. On the other hand, a custom-built desktop provides greater flexibility and control over component selection, allowing users to tailor the system to their specific needs and future upgrades

Conclusion: The pre-assembled desktop is the better choice because of the discount given, while many may want to have freedom of choosing and customizing their desktop I would still like to recommend buying the pre -assembled computer the slight trade-off in storage is manageable given the overall value and ease of purchase.

Sources:

1)Chatgpt

2)Google

3)Youtube

4)Daraz

Declaration of Originality

 I, Shoraj Ghimire declare that this submission is my original work and that all sources used have been appropriately cited.

 Signature:

Date: 10th march 2025