Trends in Anti-Counterfeiting Technologies in The Republic of Korea

Ministry of Intellectual Property

Junyoung Lim
Ministry of Intellectual Property (MOIP)

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Recent Trends: Digital Growth and Counterfeit Proliferation

- Rapid Online Growth: Online transactions in the ROK grew by 40% (2021–2024), reaching KRW 259 trillion.
- Counterfeit Market Expansion: Counterfeits have expanded beyond luxury brands to everyday consumer goods (e.g., infant products, cosmetics, automotive parts).
- Increased Risk: Expansion of volume and scope significantly increases consumer exposure and health/safety risks.

Economic and Social Impact of Counterfeiting

- Economic Loss: IP-infringing counterfeits cost Korean enterprises KRW 11.1 trillion (2021) and an estimated KRW 7 trillion in lost sales domestically and overseas.
- Job & Revenue Impact: Approximately 13,500 manufacturing jobs lost and KRW 1.80 trillion reduced in government revenue.
- Enforcement: Over 517,000 online counterfeit cases detected and blocked by MOIP in 2025. However, this is only a fraction of the actual volume of counterfeit activity.

Collaborative Counterfeit Prevention

- Policy & Enforcement : MOIP has continued to pursue legislative reforms and strengthened online monitoring in collaboration with platform providers.
- Challenges: Technological shifts, particularly advances in AI, make counterfeit goods increasingly indistinguishable and facilitate the expansion of illicit distribution networks, complicating enforcement efforts.
- Collaborative Approach: To adequately address the scale and complexity of counterfeiting activity, a preventive approach is necessary, requiring both public and market participants.
  - Government authorities conduct enforcement/legislative measures and awareness-raising activities, while trademark holders implement practical technical countermeasures to differentiate genuine goods from counterfeits.

International Guidelines and SME Support

- OECD Guidelines: Emphasis on cooperation among governments, platforms, and rights holders.
  (Source: OECD's Guidelines for Countering Illicit Trade in Online Marketplaces, May 2025)
- Joint activities include awareness-raising and information sharing support multi-stakeholder response to counterfeit distribution.
- Governments play a key role to help SMEs adopt practical preventative measures within supply chains, such as "Anti-counterfeiting technologies."

Anti-Counterfeiting Technologies and Adoption Barriers

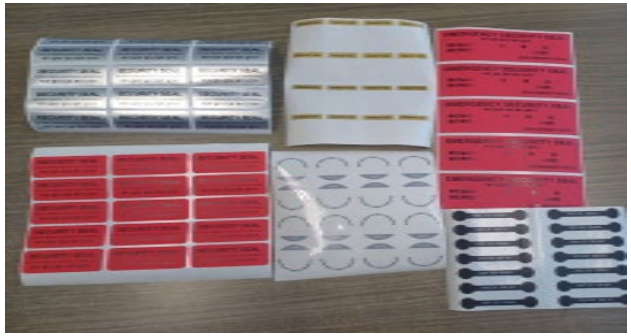
- Anti-Counterfeiting Technologies: Product-linked authentication and verification technologies that help prevent fraudulent purchase of counterfeit goods.
- Strategic Goal: MOIP aims to strengthen public-private cooperation and facilitate industry-wide adoption of anti-counterfeiting technologies.
- Primary Barriers: Limited awareness of solutions and concerns regarding high implementation costs.
- 2025 Conferences: Two major events organized in June and October 2025 to promote awareness of product authentication and counterfeit prevention measures.

Conference Highlights and Outcomes

- Networking & Seminars: Opportunities to introduce IP infringement response systems and connect anti-counterfeiting technology providers with trademark holders.
- Direct Experience: Exhibits demonstrated a wide range of anti-counterfeiting technologies and potential integration of security features with ICT.
- Impact: Participants gained practical understanding of how anti-counterfeit technology can support product verification and distribution management to combat counterfeiting.

Level 1 Technologies

- Level 1 (Visual): Low-cost, visible to the naked-eye. Includes optical interference labels (color-shifting) and tamper-evident "VOID" seals.



■ **Anti-counterfeiting Label with Optical Interference Effects**

- Optical interference security elements embedded on the label surface produces color and image change depending on viewing angle → enables verification with the naked eye.

■ **Tamper-evident Security Label with Sealing Features**

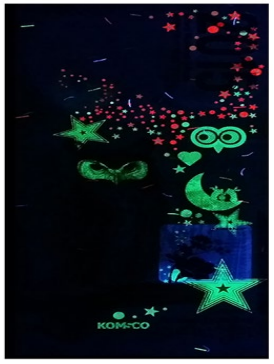
- Removal of the label from a product box or equipment reveals warning markings such as “VOID” or “OPEN”→ enables verification of authenticity and prevention of unauthorized opening.

Level 2 Technologies

- Level 2 (Digital/Tool-assisted): Use of smartphones or UV lights. Includes UV fluorescent ink, hidden watermarks, and nano-pattern images.

[Under Daylight]

[Under UVA 365nm]



■ **Security Printed Material using Ultraviolet (UV) Fluorescent Material**

- Fluorescent substances embedded in the printing ink emit light only when exposed to UV radiation of a specific wavelength → enables authenticity verifiable using a UV light.

■ **Product Box with Hidden Security Label Technology**

- Watermark-type security label affixed to the exterior of the product box, difficult to detect with the naked eye → enables instant authenticity verification and distribution tracking by consumers through a designated mobile application.

Level 2 Technologies (continued)

- Level 2 (Digital/Tool-assisted): Use of smartphones or UV lights. Includes UV fluorescent ink, hidden watermarks, and nano-pattern images.

■ **Artwork incorporating Banknote-grade Intaglio Printing Technology**

- Printing technique (commonly used for banknote production) using raised tactile texture perceptible by touch
→ Enables authenticity verifiable by tactile inspection.

■ **Authenticity Label using Invisible Security Technology**

- Imperceptible code combined with a QR code embeds variable security values, generating a unique security code for each item → enables tampering detection and real-time tracking through designated mobile applications for consumers, distributors, and manufacturers.

Level 3 Technologies

- Level 3 (Specialized): Used for investigation and enforcement. Includes RFID markers, micro-text (1/100 mm), and advanced material-response systems.

■ Authentication Tag/Marker using RFID and Related Technologies

- Advanced RFID and EM functions incorporating photonic crystal film, fluorescence multiplexing, and material-response technologies → enables counterfeit and tamper prevention and return history management.

■ Authenticity Identification Technology utilizing RFID

- Anti-counterfeiting system using ultra-high frequency (300 MHz–3 GHz) RFID technology → enables authenticity verification and history traceability at each distribution stage.

IT-integrated Monitoring and Analytics

- Real-time Monitoring: Integration with IT systems enable brand owners to monitor product movement and detect suspicious patterns (e.g., repeated failed verification).
- Channel Verification: Retail partners and distributors can verify authorized distribution and sales channels instantly.
- Centralized Analytics: Authentication data supports timely data-driven enforcement response based on abnormal distribution monitoring data.

Consumer Engagement and Brand Protection

- Consumer Communication: QR-based or mobile interfaces provide customers with authenticity confirmation alongside product/brand information and marketing content.
- Multi-functioning Data: Authentication scans by consumers can also generate time and location data, supporting abnormal-pattern detection by retailers and brand owners.
- Trust Building: Combining consumer protection and engagement strengthens confidence in a brand’s genuine products.

Future Outlook and Strategic Summary

- Beyond Enforcement: Traditional monitoring alone is no longer enough; supplementation with preventive, product-linked technologies is increasingly necessary.
- Market Transparency: Tools such as anti-counterfeiting technologies help safeguard brand value, protect consumers, and ensure market transparency.
- Next Steps: MOIP will continue refining institutional measures and strengthening public-private cooperation to promote a trustworthy marketplace.

Thank you

limjy32@korea.kr