

A Study on Communication Strategies for Response to Korea-EU Technology Regulations: Focusing on the Cases of Response to Energy Efficiency Regulations in the Electronic Display Industry

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Abstract: This study aims to focus on the EU electronic display energy efficiency-related regulations among the environmental regulations that have become an issue recently. The formal TBT response takes place through government-led channels. However, both the government and private organizations can participate in delivering opinions. The purpose of this study is to study the outcome of the strategy of diversifying into private channels in dialogue between countries that respond to regulations. According to the analysis results, government channels responded mainly to regulations that have a direct impact on exports, and private channels responded to all regulations, including valid evidence. The government's response was from a short-term perspective, while the private channel's response was from a long-term perspective. In response to technology regulation, it has been proven that the government and private channels jointly respond to the need for a dialogue strategy to understand the other party. Therefore, in response to technical regulations, a convergent communication strategy including cultural, social, technological, conventional, and legal perspectives is required. The role of the government and private channels is important in creating an institutional environment in which the results of technological regulation response using convergent communication strategies can promote technological innovation of companies. The Korean government should actively communicate with the EU government through an integrated communication strategy

Keywords: TBT (Technical Barriers to Trade), Joint response, Government channel, private channel, convergent communication

1. Introduction

Recently, the European Union has decided to reduce greenhouse gas reduction targets in stages by 8% from 1990 by 2012, 20% from 1990 by 2020, and by 40% from 1990 by 2030. In addition, in December 2019, the European Green Deal proposed by the EU Commission was agreed at the EU Summit and announced a carbon neutral target to reduce net carbon emissions to zero by 2050. (Y.J. 2015). Accordingly, the European Union is refining environmental regulations to achieve its policy goals, and the regulations already in place are strengthening. (Seungil et al., 2007) Regulation is recognized as a major strategic tool influencing the innovation activities of companies in the industry. (Sook-won & Sang-yoon 2010) In recent years, many studies have analyzed the impact of regulation on innovation and classified positive and negative factors, but it is important to design strategies that recognize and respond to regulatory rules as a catalyst for innovation. Regulations in certain countries are difficult for firms to control, but their impact on innovation activities and performance is significant, so the impact of actions taking place to meet regulations should be considered.

Along the line, this study aims to focus on the EU electronic display energy efficiency regulation among the environmental regulations that have recently become an issue. Among the single-country and single-item regulations, the largest number of difficulties in the Korean industry have been received, and potential threats have increased due to the recent strengthening of EU environmental policies, which requires continued response in the future. In this study, the response cases of EU electronic display regulations (eco-design, energy labeling) were analyzed using the WTO response report of the Korea Agency for Technology and Standards(KATS) and the response data of the Korea Electronic Association(KEA). Focusing on the response cases of government channels and private channels, we will present effective countermeasures and policy implications for the TBT response between Korea and the EU.

2. Prior Research

2.1. TBT (Technical Barriers to Trade)

With the transition from GATT to the WTO system, the TBT agreement was adopted as one of the annexes to the WTO agreement, and it is a coercive agreement that is effective for all WTO members, and has the same effect as domestic law.

The WTO TBT Agreement aims to ensure that technical regulations, standards and conformity assessment procedures do not create unnecessary obstacles to international trade. The WTO prohibits regulating trade more than necessary. However, exceptions do not regulate national security, prevention of deceptive practices, human health or safety, and protection of the life, health and environment of plants and animals. **(Y.J. 2015)**.

In order to be produced, sold and distributed in the market, a product must meet the characteristics and standard requirements required by each country. In particular, the technical regulations, standards, and conformity assessment procedures applied by country have a great impact on industry and economy, as well as trade. As such, if technical regulations, standards and conformity assessment procedures are operated differently from country to country, trade is adversely affected.

2.2. Types of TBT (Technical Barriers to Trade)

As a type of technical barrier to trade, it is a barrier by technical regulations and standards. Even if the technical regulations are for the health, safety, and environmental protection of their own citizens, there may be discriminatory disadvantages to foreign companies in operation. **(K.H. 2016)**

Second is the compulsory inspection and certification system. The cost and administrative burdens of manufacturing companies can act as a barrier, such as requesting duplicate inspections, taking excessive time in inspection procedures, and obligating obtaining specific certification marks. **(Korean Agency for Technology and Standards 2016)**

Third is the labelling requirement. In recent years, various labelling compulsory systems are on the rise, and the mandatory labelling of specific labels can create a differentiation for specific production factors or become a trade barrier for countries with insufficient technology. **(Korean Agency for Technology and Standards 2016)**

2.3. Regulation and technology innovation

The need for regulation is complemented by the fact that technology development is undertaken by the level of demand of the market, and it plays a pure function to meet the safety and needs of consumers. However, poorly set or excessive regulatory targets can have a negative impact on a company's technological innovation, production and growth. **(Sook-won & Sang-yoon 2010)**

The impact of regulation on technological innovation reflects the situation of the times and the level of technology, and appropriate regulation in harmony with major policies that induce and promote corporate technological innovation.

Table.1. Major Prior Research on the Impact of Regulation on Technology Innovation **(Sookwon & Sangyoon 2010)**

Researcher	Results
Rothwell (1992)	In the case of environmental regulation, the goal of regulation is social warfare rather than promoting technological innovation. It is a function to regulate specific situations in the market so that it is beneficial to the body. Therefore, it has no choice but to have a negative effect.
Besen & Raskind (1991)	Deregulation can function effectively in the rapid and widespread dissemination of inventions.
Bassanini & Ernst (2002)	There is a negative correlation between the difficulty of product market regulation and R&D expenditure.
Seungil Jeong et al. (2007)	As a result of understanding the impact of regulatory reform on technological innovation and examining the effect of detailed regulatory reform on technological innovation, the overall effect of regulatory reform is that the lower the level of corporate control by the government, the more active R&D activities of companies.

3. Research Method

WTO member states are prohibited from seas that interfere with each other's trade. However, there are regulations that interfere with trade for the purposes of public safety, national defence, and environmental protection. This is called technical regulation or trade technical barrier. **(Korean Agency for Technology and Standards 2016)** This study aims to focus on the EU electronic display energy efficiency-related regulations among the environmental regulations that have become an issue recently.

The formal TBT response takes place through government-led channels. However, both the government and private organizations can participate in delivering opinions. In the process of responding to regulations, this study aims to study the outcome of the strategy of diversifying from inter-country dialogue, which is the main dialogue channel, to private channels.

The EU eco-design system aims to consider energy efficiency and material efficiency from the design stage to minimize environmental impact in the whole process of product production. As for electric and electronic products, over 80% of the impact on the environment is determined at the design stage, so from the design stage, environmentally friendly considerations were taken into consideration and the responsibility of the manufacturer was emphasized so that it could be supplied to the final consumer. **(Korean Agency for Technology and Standards 2019)**

Prior to 2009, it was called an energy-use-product (EuP), but at that time, a law applied only to products that directly use energy (eco-design is a design method aimed at reducing adverse effects on the environment. However, the Eco-design Guidelines are a law with the aim of compulsory application to products).[11] Afterwards, it was revised (in 2007) to the Directive 2009/125/EC (Directive 2009/125/EC) to expand the scope to energy-related products (ErP), and applied items were expanded from existing energy-using products to energy-related products. **(Regulation (EU) 2017/1369 energy labelling of electronic displays, L 315/1)**

RQ 1: When responding to EU electronic display eco-design regulations, will private channels a meaningful role in dialogue channels between countries?

For the next, Products that fall under the application category of the energy labelling regulations are obligated to display an energy class label according to energy efficiency so that consumers can know the energy consumption efficiency of the product. Manufacturers must have documents such as product specifications and test reports to prove the accuracy of the information in the label, and if they suspect that the information on the label is false, they must submit the basis for the label content to the EU Commission. These energy labelling regulations are also part of the requirements set out in the Eco-design Guidelines. **(Regulation (EU) 2019/2021 eco-design requirements for electronic displays, L 315/241)**

The Energy Labelling Regulation (2010/30/EU) was implemented as an energy efficiency policy requiring labelling of energy-related products and provision of standardized energy consumption information.[15] In 2004, it was mandated to mark the energy grade label of grade 7 (A~G) according to efficiency so that consumers can check the energy efficiency performance of the product. In 2010, the grade display was changed to divide A grade into three and set the lowest grade to D, and in 2017, the energy grade indication method was reverted to seven grades from A to G, and the ratio of the highest grade products was changed.[14] In addition, with the introduction of EPREL (Energy Label Database) and QR Code in 2019, the mandatory guidelines for complying with eco-design and energy labelling regulations were revised to reflect energy-saving designs in energy-related products for the purpose of enhancing information accessibility. **(Regulation (EU) 2019/2021 eco-design requirements for electronic displays, L 315/241)**

The energy labelling regulations are applied to the standards and labelling methods for energy efficiency levels for each of 16 items and are expected to be expanded to products subject to the Eco-design Guidelines. Manufacturers, importers, and service providers, which are the subject of implementation, need to have documents such as product specifications and test reports, and to establish a basis for label contents in order to prove the accuracy of label information.

Products belonging to energy labelling must be marked with an energy class label so that consumers can know the energy efficiency of the product and must also be attached to the product and packaging. EU electronic display eco-design regulations are divided into main text and annexes.

RQ 2: So, do private channels a meaningful role in cross-border dialogue channels even in EU electronic display energy labelling regulations?

This study aims to analyse the response methods and cases of government and private channels by regulation using the KATS and KEA WTO TBT response reports.

4.Result

In this study, using the WTO response report of the Korea Agency for Technology and Standards (KATS) and the response data of the Korea Electronic Association (KEA). In addition, the changes in regulations were analysed through the response cases of government channels and private channels of EU electronic display regulations (eco-design, energy labelling).

EU electronic display regulations were notified of reinforced regulations in 2016 and re-notified in 2019 after three years of discussion on revision. To resolve technical regulations, government and private channels responded to 15 eco-design and 10 energy labelling regulations. The result is as follows.

Table.2. Response result (WTO response report of KATS and KEA 2019)

(Unit: cases)

Division	Accepted (EU Commission)	Accepted (Enterprise)	Not accepted	Total
Eco-Design Regulation	6	4	5	15
Energy Labelling Regulation	2	6	2	10

As a result of the response of the Korean government and private channels, the EU revised 6 clauses in the Eco-design Regulation, and not accepted 9 clauses. Among the non-acceptance clauses, Korean companies accepted 4 clauses, and clauses require continuously response. In the energy revelling regulation, the EU revised 2 clauses and not accepted 8 clauses. Among the non-acceptance clauses, Korean companies accepted 6 clauses, and 2 clauses require continuous response. The results of the number of responses to government and private channels are as follows.

Figure.1 Cases of EU Electronic Display Eco-design Regulation Response 2016-2019 (Korea Electronics Association TBT response data 2019)

(Unit: cases)

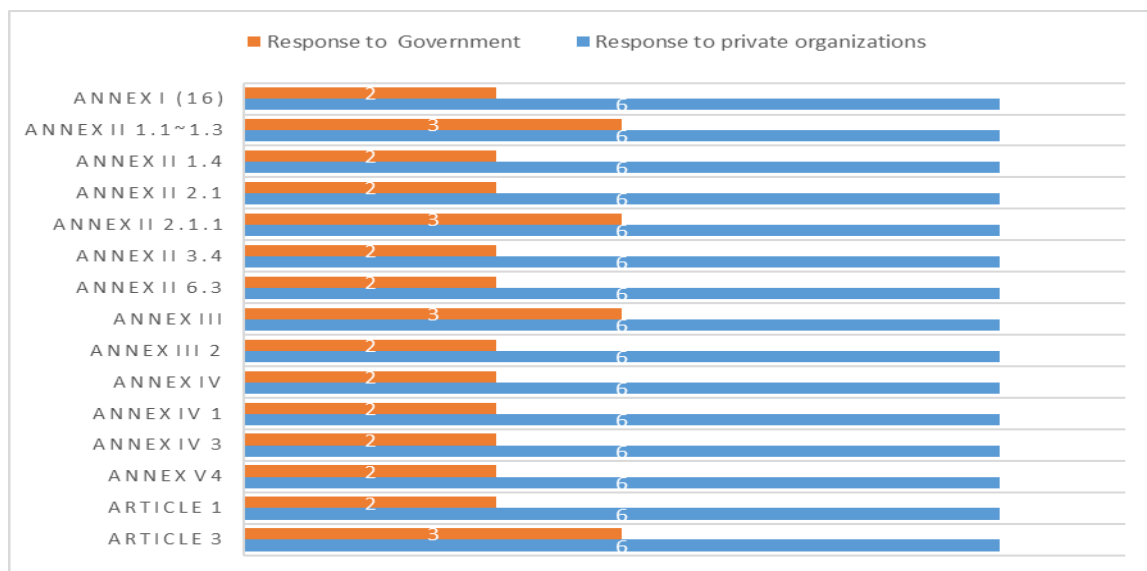


Table.3. Result of EU Electronic Display Eco-design Regulation Response 2016-2019 (**Korea Electronics Association TBT response 2019**)

Division	EU Regulation (EU/609 ‘16.12)	EU amendment (EU/609, ‘19.12)	Acceptance
Article 1	2. The requirements in Annex II shall not apply to: (a) Digital signage displays.	Articles 1 Subject matter and scope 2	Accepted (Enterprise)
Article 3	Tier 1 : 2018.7.1 Tier2 : 2020.1.1 Tier3: 2022.1.1	Tier 1 : 2021.3.1 Tier2 : 2023.3.1 Tier3: delete	Accepted (EU Commission)
Annex I (16)	(16) ‘Network port’ means	ANNEX I (Definitions applicable for the Annexes) 16	Not accepted (Need for continuous response)
Annex II 1.1~1.3	ENERGY EFFICIENCY INDEX LIMITS FOR ON-MODE	ANNEX II (Ecodesign requirements A., 1	Not accepted (Need for continuous response)
Annex II 1.4	1.4 OLED displays and displays EEI	ANNEX II (Ecodesign requirements) A. 1	Not accepted (Need for continuous response)
Annex II 2.1	Power demand in off mode and standby mode	ANNEX II (Ecodesign requirements) A. 1	Not accepted (Need for continuous response)
Annex II 2.1.1	Stand by mode: 0.3 W Off mode: 0.3 W	Stand by mode 0.5W, Off mode 0.3W	Accepted (EU Commission)
Annex II 3.4	3.4. Electronic displays marketed as computer displays and electronic display	ANNEX II (Ecodesign requirements) 4	Accepted (EU Commission)
Annex II 6.3	6.3. Display products with ABC enabled by default	o ANNEX II (Ecodesign requirements) B, 2	Accepted (Enterprise)

Annex V 4	Measurements of peak luminance and on-mode power	ANNEX III Measurement and calculation methods 4	Accepted (Enterprise)
Annex III	Measurements of on mode power demand	delete	Accepted (EU Commission)
Annex III 2	Marking of plastic parts	delete	Accepted (EU Commission)
Annex IV	Product Information	Annex II E	Accepted (Enterprise)
Annex IV 1	year of manufacture	delete	Accepted (EU Commission)
Annex IV 3	Repair and end of life documentation and information	Annex ANNEX II E	Not accepted (Need for continuous response)

Figure.1 Cases of EU Electronic Display Energy Labelling Regulation Response 2016-2019 (**Korea Electronics Association TBT response data 2019**)

(Unit: cases)

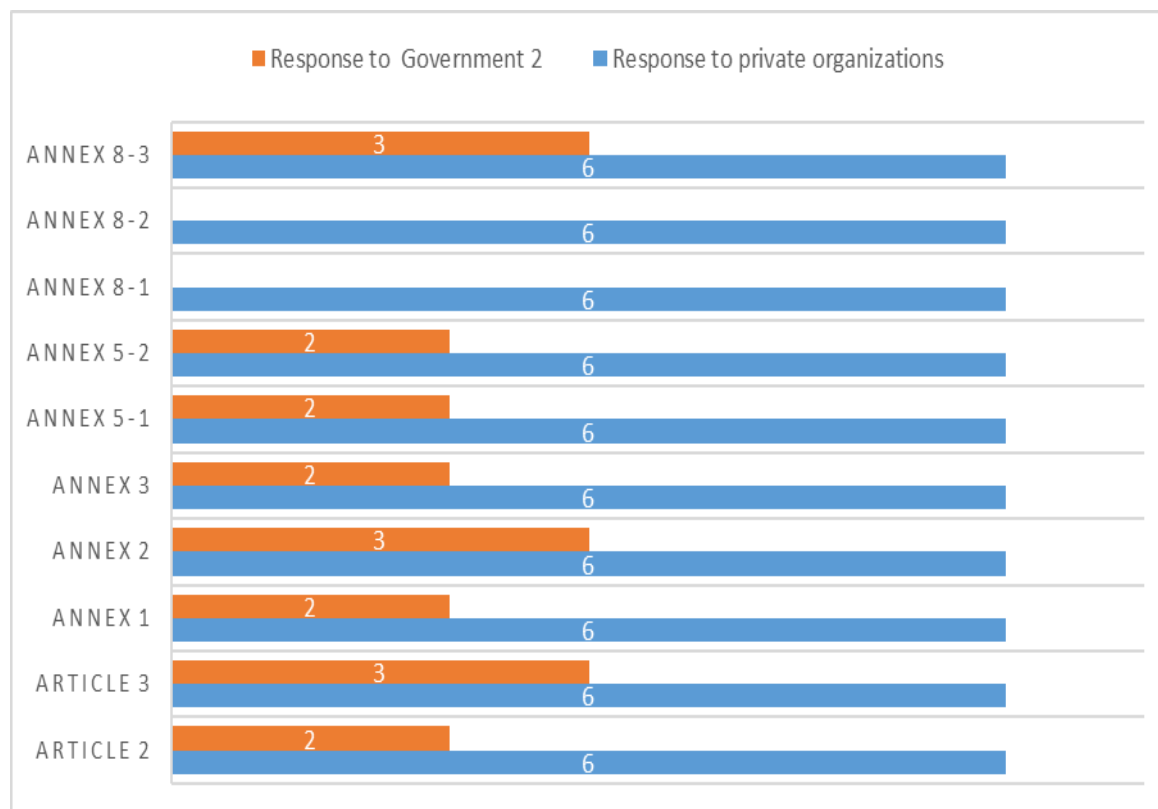


Table.4. Result of EU Electronic Display Eco-design Regulation Response 2016-2019 (**Korea Electronics Association TBT response 2019**)

Division	EU Regulation (EU/609 ‘16.12)	EU amendment (EU/609, ‘19.12)	Acceptance
Article 2	Article 2(Definitions), 5. (d), (e)	Article 2, (13). (d), (e)	Accepted (Enterprise)
Article 3	Article 3(Responsibilities of suppliers), 1. (a)	Article 3, 1. (g)	Not accepted (Need for continuous response)
Annex 1	Annex 1(Energy efficiency class)	ANNEX II, A	Accepted (Enterprise)
Annex 2	ENERGY EFFICIENCY INDEX LIMITS FOR ON-MODE	ANNEX II, C, (2) Electronic display with ABC enabled by default	Accepted (Enterprise)
Annex 3	Annex 3(Product Information Sheet), 1. (b)	ANNEX III (Label for electronic displays) (II)	Accepted (Enterprise)
Annex 5-1	Annex 5(Label), V	ANNEX III (Label for electronic displays) (VII)	Not accepted (Need for continuous response)
Annex 5-2	Annex 5(Label), XIII	(III) QR code	Accepted (Enterprise)
Annex 8-1	Annex 8(Product compliance verification by market surveillance authorities), XIII	ANNEX IX (Verification procedure for market surveillance purposes). Table 7	Accepted (Enterprise)
Annex 8-2	The determined value(1) does not deviate more than +/- 1 mm or 0.04 inches from the declared value.	ANNEX IX (Verification procedure for market surveillance purposes). Table 7	Accepted (EU Commission)

Annex 8-3	No tolerances	ANNEX III (Label for electronic displays) (II)	Accepted (EU Commission)
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According to the analysis results, there are characteristics of government channels and private channels. The government channels responded mainly to regulations that directly affect exports such as the timing of implementation and the EEI index, and the private channels responded to all regulations, including valid evidence. The government's response is a short-term perspective that minimizes the impact of exports with quick results, while the private channel's response sufficiently reflects the opinions of the industry to provide evidence and respond to future revisions from a long-term perspective, including proposals.

As a result, when responding to the EU electronic display eco-design regulation, private channels also played a significant role in dialogue channels between countries. At the request of the Korean government, the EU electronic display eco-design and energy labelling regulations have been partially relaxed, including the easing of the EEI index and extending the implementation period. However, high-resolution products of 8K or higher still have limitations in entering the EU market, requiring continuous response from government and private channels.

In addition to response to EU electronic display eco-design regulations, government channels and private channels were analysed as major countermeasures. In the energy revelling regulation, there are cases in which EU policy has reflected only private response without government response. It has been proved that the government and private channels jointly respond to the technical regulation and a dialogue strategy is needed to understand the other party. Technological regulation response is a collection of various interests such as cultural, social, technological, conventional, and legal perspectives. In other words, a convergent communication strategy is needed.

The role of the government and private channels is important in creating an institutional environment in which the results of technological regulation response using convergent communication strategies can promote technological innovation of companies. It suggests that regulatory reinforcement and relaxation management are essential for technological innovation of domestic export companies. Therefore, companies need to be aware of changing regulatory policies and social issues and respond to regulations through R&D considering technological regulatory factors for product and service innovation. And businesses need to recognize the importance of new regulatory responses and pay attention to new markets under environmental regulations to pursue growth while responding to strengthening environmental regulations. Therefore, the Korean government must actively communicate with the EU government through an integrated communication strategy.

5. Conclusion

This study analysed cases of government and private channels for EU electronic display eco-design and energy labelling regulations using data from KTAS and KEA WTO TBT technical regulation reports. To respond to EU technical regulations, the response process, and the number of responses of government and private channels were analysed, and response results for each provision were also analysed.

Government channels responded mainly to regulations that have a direct impact on exports, while private channels responded to all regulations, including valid evidence. The government's response was from a short-term perspective, while the private channel's response was from a long-term perspective. In response to technology regulation, it has been proven that the government and private channels jointly respond to the need for a communication strategy to understand the other party. And the role of the government and private channels is important in creating an institutional environment in which the results of technological regulation response can promote corporate technological innovation. However, such research results need to be supplemented as they do not reflect the analysis using variables such as cultural, social, technical, and legal perspectives included in the convergent dialogue strategy.

In future research, it is necessary to analyse the influence of variables that play a major role in the convergence dialogue strategy. In addition, it is necessary to analyse the correlation between regulation and technology innovation, such as corporate regulatory improvement activities, technology R&D, and response organization changes in response to technology regulations. Therefore, research on convergent dialogue strategy research and technical innovation performance of specific technical regulations will be left as follow-up studies.

Despite the above limitations, this study provides useful implications for the importance of government and private countermeasure channels as well as measures to improve the related response system as a case data for response to EU electronic display eco-design and energy labelling regulations that affect R&D of companies. Furthermore, it is expected that it will be able to contribute to the establishment of corporate technology innovation and performance improvement plans.

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