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# Flexible Work Arrangements and Financial Performance in Korea

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**ABSTRACT**

**Purpose –** The purpose of this paper is to verify the effectiveness of various types of flexible work arrangements and to provide implications on financial performance. This study further examined the effects of flexible work arrangements on firm performance depending on the size of firms.

**Design/Methodology/Approach –** Using the panel data collected from 2016 to 2018, the study performed multiple regression analyses to analyze the effects of introduction and practical utilization of flexible work arrangements on firm performance, respectively. This study used the panel data of flexible work arrangements from the Korean Women Manager Panel Survey by the Korean Women's Development Institute.

**Findings –** We found that firm performance was not enhanced by mere introduction of flexible work arrangements. The empirical results provided evidence that the utilization of work from home positively affected firm performance, while the other flexible work arrangements did not have significant effects on firm performance. The findings were more evident in smaller companies, where the utilization of work from home was positively related to firm performance, and flexi-time was negatively related. For larger companies, flexible working hour utilization was positively related to firm performance.

**Research Implications –** The use of flexible working hours could be of help for larger companies with relatively more rigid culture. Flexi-time utilization could sacrifice financial performance for smaller firms, implying that having core hours might be more crucial for these companies to prevent potential communication problems. The use of work from home may benefit smaller companies with relatively more compact teams or a simpler structure.

*Keywords:* firm performance, flexible work arrangements, flexible working hours, flexi-time, tele-work, work from home
*JEL Classifications:* M10, M12, M50

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# I. Introduction

Working systems suitable for strategies to motivate employees and enhance organizational performance are critical in a new environment. The increase in employees who value work-life balance has consistently emphasized the importance of flexible work arrangements (FWAs) intended to help manage the stress of employees. FWAs often relate to changes in work times, workplace, or compressed working hours. In the global pandemic era, FWAs have become essential for survival, not a matter of choice. Before the pandemic, telework, one of the programs that was relatively uncommon and used by only about 5% of the total workforce, has now become the most important form of work. In May 2020, the number of Americans using telework increased to 62% (Economist, 2020). Achieving sustainability in the unprecedented new environment and further turning these crises into opportunities is a goal to be pursued, and companies introducing FWAs to perform non-face-to-face work stably may quickly adapt to the new normal.

Most empirical research explained the effects of FWAs on performance at the individual level and associated the job experience with attitude or behavior that may affect performance. Prior research on work-life programs that include FWAs focused on organizational outcomes including employee productivity, absenteeism and turnover (e.g. Cegarra-Leiva et al., 2012; Clifton & Shepard, 2004; Wood & de Menezes, 2010) rather than financial performance (e.g. Berkery et al. 2017; Bloom et al., 2011). Studies on telework were also based on individual perceptions, while the organizational level has been largely missed (Brittany & MacDonnell, 2012). Although scholars have reported the positive influence of FWA availability or provisions, few examined the impacts of FWAs on financial performance. Those who used qualitative performance and subjective perceptions measured in individual levels argued that these outcomes may reflect financial outcomes (Bal & Dorenbosch, 2015), which is unknown as the level of overlap between the two is not clear (Kotey & Sharma, 2019).

In addition, the findings of the few studies on financial performance reported mixed results with positive and nonsignificant influence. For instance, Meyer et al. (2001) and Sands and Harper (2007) reported a positive relationship between telecommuting and financial performance. In contrast, Berkery et al. (2017) examined FWAs of organizations in European Union countries and found nonsignificant impacts on financial performance.

We extend the literature on the effectiveness of FWAs by specifically classifying them into four types: flexible working hours, flexi-time, work from home, and tele-work. Flexible working hours (whether employees have choice of time to carry out work) and flexi-time (whether employees can decide when to arrive and leave the workplace) are related to schedule flexibility, while work from home (telecommuting that allows home-based work) and other tele-work (telework using devices such as computers and tablets, which enables employees to work from remote locations other than home in this study) are related to space flexibility.

To add empirical evidence of the impacts of these programs on financial performance, this paper examines the relationship between FWAs of Korean companies and ROA. To sift the true effect of FWAs on financial performance, we distinguished between the introduction and the practical use of FWAs of Korean companies. Although many companies have recently introduced FWAs, whether FWAs are actually used or not may depend on the organizational culture or atmosphere, which eventually influence the impact of the system on firm performance. As de Menezes and Kelliher (2011) called for studies including more detailed measures such as use and length of use of FWAs, this paper analyzes both whether companies have flexible programs for schedules or workspaces, and whether employees are practically utilizing them without psychological burden. Empirical research based on diverse samples to generalize the results and longitudinal designs are required to establish causality. Therefore, we examined 416 companies from panel data between 2016 and

2018, demonstrating the influence of FWAs on ROA and comparing its difference according to firm size (larger vs. smaller) to suggest additional implications for Korean companies to adopt FWAs suitable for their characteristics.

This study contributes to extend the literature on the impact of FWAs on firm performance by providing evidence in Korea. Compared to developed countries in the West, Korea has been relatively slow to introduce and spread FWAs. Thus, this study is meaningful in that it investigates Korean companies in the early stage of FWA application and expands prior empirical research on the company level. This paper gives practical implications to the policy makers in that this study distinguished the impact of introduction and utilization of various FWA forms.

## II. Theoretical Background

### 1. Flexible Work Arrangements (FWAs)

Flexible work arrangements (FWAs) refer to options that enable employees to work outside the traditional confines of a standard organization of work regarding distribution of working time as well as working place (Shockley & Allen, 2007). In a systematic review, de Menezes and Kelliher (2011) explained the FWAs in terms of schedule flexibility and remote working that focused on compressed working time and reduced hours.

Three main categories of FWAs can also be viewed as flexibility in scheduling of hours, flexibility in length of the work, and flexibility in location, depending on the method of changing work patterns (Austin-Egole et al., 2020). Flexibility in scheduling relates to flexibly select and design the commuting time or work schedule, even if the total working hours are consistent. Flexibility in the amount of work involves the relocation of work time during the week. Employees can work for longer hours when needed for some period or alter their start and finish times for commuting. Flexibility in location is about a flexible design of workplace by permitting employees to work from various locations. FWA

examples cited by Austin-Egole et al. (2020) include compressed work week, weekend work, temporary/casual work, shift work, overtime, annual hours contract, fixed-term contracts, part-time work, job-sharing, flexi-time, and home-based work or telecommuting.

The necessity and importance of the FWAs can be viewed from several theoretical backgrounds. Based on the social exchange theory, employees satisfied with benefits out of flexible work environments are likely to reciprocate employers with desirable attitudes and less turnover intention (Casimir et al., 2014). As the availability of FWAs signals to employees that the firm cares about them, according to the perceived organizational support theory (Casper and Harris, 2008), workers might respond more favorably to their companies (Kotey & Sharma, 2019).

According to the job characteristics model, core job characteristics including autonomy, job identity, job importance, functional diversity, and feedback can positively affect employee psychological states, thereby increasing job satisfaction and performance. FWAs may allow individuals to choose when and where they engage in tasks, which can enhance performance through dedication and commitment (Dalcos & Daley, 2009). Based on the work adjustment model that correspondence between abilities and job requirements leads to higher performance, flexi-time could affect attitudes, behaviors, and performance of employees (Chow & Chew, 2006). Karasek's (1979) model implies that discretion related to working arrangements enables employees to deal with high work demands (de Menezes & Kelliher, 2011).

FWAs are considered to reduce work-family conflicts because workloads are matched with work time and they enable employees to accommodate family responsibilities and needs. There is psychological burden occurring when employees do not meet the level required for family and work roles in the presence of role overload; the negative emotions or behaviors caused in one domain can have spillover effects by being transferred to another domain despite physical, psychological, and temporal boundaries (Grzywacz & Butler, 2005).

## 2. FWAs and Organizational Performance

The use of FWAs can help employees reduce conflicts between roles at work and at home without compromising organizational performance. FWAs are helpful in improving corporate profits or the quality of services (Stavrou, 2005), motivate employees and improve work quality (Carlson et al, 2010). FWAs also increase organizational member job commitment (Park & Kim, 2017) and customer orientation (Yang, 2020). Min and Park (2013) found that employees that use FWAs had high job satisfaction and decreased turnover intention. Hwang and Han (2013) also said that positive expectations and faithful implementation of FWAs help to increase job satisfaction and performance.

According to Kim and Ahn (2018), place-related FWAs could damage interpersonal relationships or emotional trust in the organization. Time-related FWAs such as staggered commuting and flexible working were found to have positive effects on interpersonal relationships and institutional trust in the organization. With regard to space-related FWAs such as telecommuting or telework, however, negative effects were found on the interpersonal relationships and emotional trust in the organization, showing contradictory results.

FWAs might increase employee stress due to imposed intensive work by reduced work time or extensive work on days off (Kelliher & Anderson, 2010). Thus, workplace cultures and structures to fit FWAs are essential for effective implementation (Kotey & Sharma, 2019). Lee (2001) argued that telecommuting could hurt organizational productivity by increasing the burden of women performing dual roles at work and at home. Also, he suggested that since telecommuting reduces interpersonal contact, there may be consequences such as increased stress, isolation, and weakening of the union. Whereas FWAs can increase worker autonomy over time and place, they might lead to a negative transfer of work to be done for longer time or to bring work home. Kwon (2010) reported that flexible working hours did not have a significant effect on job satisfaction improvement.

The prior research may raise doubts on the effectiveness of FWAs. However, it was not until recently that many companies implemented FWAs in Korea. Thus, there is a possibility that meaningful statistical results may not appear, and that organizational members may not have properly recognized the meaning of the system when FWAs were not fully utilized (Kwon & Kwon, 2013). Organizational factors such as family-friendly culture and interpersonal factors such as social support from superiors and colleagues should be supplemented for this system to be activated and effective (Jeong & Park, 2020).

A meta-analysis (de Menezes & Kelliher, 2011) of 18 studies on the association between FWAs and firm performance found 8 (44%) positive associations, 9 (50%) no relationships, and 1 (6%) negative relationship. From the evidence at a firm level rather than individual level, research on the influence of specific FWAs on profit indicated distinct effects. Work from home was positively associated with profit (Meyer et al., 2001) and remote working was positively associated with return on assets and return on equities (Sands and Harper, 2007), although both studies focused on family-friendly companies with 'Best/Great places to work' awards.

The adoption intensity of both schedule flexibility and remote working increased firm performance of Spanish companies (Martinez-Sanchez et al., 2008) and schedule flexibility decreased turnover (Stavrou, 2005). The strongest case would be absenteeism reduction in relation to remote working, although the relationship with productivity and other financial measures is less obvious (de Menezes & Kelliher, 2011).

Akter et al. (2021) noted that the impact of work-life programs was beneficial for large companies, whereas the effects in small and medium-sized firms were not consistent. For example, Arthur and Cook (2004) reported that the reactions of stock price to family-friendly programs in large firms were positive, and Avgar et al. (2011) also found that higher usage of the initiatives were helpful for the financial performance of hospitals. Martinez-Leon et al. (2019) studied small and medium firms and reported positive relationships between availability of family-friendly practices

and financial results. On the contrary, Bloom et al. (2011) showed an insignificant association of family-friendly work arrangements with return on capital in medium-sized manufacturing companies in France, Germay, the UK, and the US. Similarly, Cegarra-Leiva et al. (2012) demonstrated insignificant results related to these practices in small and medium-sized companies and pointed out that adopting these programs may be expensive for these enterprises, and that a supportive culture is needed.

The prior research suggests that FWAs may promote benefits in large organizations, whereas small and medium-sized companies with limited resources need to consider high costs in implementing these FWA programs (Akter et al., 2021). The previous findings can also be viewed from country-context perspectives. The positive influence of these arrangements on financial returns was reported in the UK or US, whereas research performed in Spain (Cegarra-Leiva et al., 2012) or Germany (Giardini & Kabst, 2008) demonstrated the programs did not positively relate to financial outcomes. Although Spanish workers generally work long hours and consider these initiatives as their right rather than support, their employers look less supportive to work-life balance or lack a supportive culture to use the arrangements (Akter et al., 2021). Due to different cultures and relatively generous government policy, German employees anticipate more from their companies than those from the US, which might be one of the reasons for the insignificant results (Akter et al., 2021).

This research on work-life programs focusing on flexible work schedules, teleworking, and child/ dependent care reported beneficial impacts on organizational outcomes in across-industries studies (Akter et al., 2021). However, most utilized a cross-sectional design by analyzing performance outcomes such as perceived performance, employee motivation or productivity, retention, and reduced absenteeism rather than financial performance. Studies on flexible work schedule, flexible timing, and alternative work schedule reported mixed results with the positive influence (Lee & Hong, 2011; Martinez-Leon et al., 2019)

and insignificant influence (Meyer et al. 2001; Sands and Harper, 2007). The current study fills gaps in the literature by considering the financial performance of return on asset with longitudinal data to enhance the findings' internal validity. It also distinguishes the impacts of the introduction and practical implementation of flexible working programs on Korean firm financial performance. Finally, it compares the empirical results by dividing the sample into larger and smaller firms to see if there are differences in the effects of FWAs on financial performance.

Summarizing the discussions above, we propose the following research questions in this paper: "Does the introduction and utilization of FWAs respectively enhance firm performance?" and "Does the impact of FWAs on firm performance vary according to firm size?"

## III. Research Methodology

Using the longitudinal data collected from 2016 to 2018, the study performed multiple regression analyses to analyze the impacts of variables related to the introduction and practical utilization of FWAs on firm performance. This study used the panel data from the Korean Women Manager Panel Survey that has been implemented by the Korean Women's Development Institute. The institute has conducted panel data surveys of the human capital and working conditions through visits, phone calls, and e-mails, targeting employees at the manager level or higher in companies with 100 or more employees nationwide.

For independent variables, we measured the dummy variables of whether companies introduced two schedule-based programs (flexible working hours and flexi-time) and two space-based programs (work from home and tele-work). To verify the impact of practical use, we also considered whether they practically utilized the FWAs. "Flexible Working Hours" was measured as 1 if it has been introduced and 0 otherwise. The policy allows employees to change the schedule by reducing working hours during a relatively low workload period, while increasing them when

more work is needed. "Work from Home" was coded 1 if employees are allowed to work from home during working hours, and 0 otherwise. "Tele-work" was also coded 1 if employees can work from remote locations other than home using technology devices, and 0 otherwise. "Flexi-time" was coded 1 if employees are allowed to choose when to start and finish work, and 0 otherwise.

To verify the impact of practical implementation of FWAs, we also included dummy variables representing the use of programs. "Flexible Working Hours Utilization" was coded 1 if the policy has been practically utilized, and 0 otherwise. Likewise, "Work from Home Utilization", "Tele-work Utilization", and "Flexi-time Utilization" were respectively coded 1 if they have been used by employees after introduction, and 0 otherwise.

ROA, percentage of net income divided by total assets, was used as the dependent variable to measure firm performance. The regression analysis model included debt ratio, sales growth, firm size, industry, and year dummy as control variables to control their impacts on ROA. Debt ratio was measured as the percentage of total liabilities divided by equity. Sales growth was included to control firm growth as the percentage of net sales divided by the sales for the previous year. We used the natural logarithm of total assets for year-ends as a proxy variable for firm size, because the sizes of total assets are not normally distributed. The industry dummy was categorized based on the Section of the Korean Standard Industry Code and the year dummy variable was also included in the model.

We performed multiple regression analyses for the empirical studies of the relationship between FWAs and firm performance, as presented in equation (1):

**Table 1.** Definition of Variables

| Variables | Definitions |
|---|---|
| Flexible Working Hours | A dummy variable coded 1 if employees are allowed to change working hours depending on workload period. |
| Work from Home | A dummy variable coded 1 if the program to allow home-based remote working is introduced, and 0 otherwise |
| Tele-work | A dummy variable coded 1 if the program to allow remote working from other locations is introduced, and 0 otherwise |
| Flexi-time | A dummy variable coded 1 if the program to allow changing commuting schedule is introduced, and 0 otherwise |
| Flexible Working Hours Utilization | A dummy variable coded 1 if Flexible Working Hours is practically utilized, and 0 otherwise |
| Work from Home Utilization | A dummy variable coded 1 if Work from Home is practically utilized, and 0 otherwise |
| Tele-work Utilization | A dummy variable coded 1 if Tele-work is practically utilized, and 0 otherwise |
| Flexi-time Utilization | A dummy variable coded 1 if Flexi-time is practically utilized, and 0 otherwise |
| ROA | Net income / Total assets * 100% |
| Debt | Total liabilities / Total equity * 100% |
| Sales Growth | Net sales / sales for the previous year * 100% |
| Size | Firm size measured as ln (total assets) |
| Year | Year dummy variable |
| Industry | Industry dummy based on Section of the Korean Standard Industry Code |

$$ROA = \beta_0 + \beta_1 FWA_S + \beta_2 Debt + \beta_3 \\ Salesgrowth + \beta_4 Size + \beta_5 year \\ + \beta_6 industry + \varepsilon \tag{1}$$

In equation (1), the independent variables of FWAs included flexible working hours, work from home, tele-work, and flexi-time, respectively. In order to verify the effect of the practical utilization of FWAs, we replaced the FWA variables with the FWAs utilization, which included flexible working hour utilization, work from home utilization, tele-work utilization, and flexi-work utilization, as presented in equation (2).

$$ROA = \beta_0 + \beta_1 FWA_S\_utilization + \beta_2 \\ Debt + \beta_3 Salesgrowth + \beta_4 Size \\ + \beta_5 year + \beta_6 industry + \varepsilon \tag{2}$$

Table 1 lists the definitions of the variables used in the model of the study.

## IV. Empirical Findings

### 1. Descriptive Statistics

Table 2 summarizes the descriptive statistics of the variables included in the empirical model and presents the mean, standard deviation, minimum, and maximum values. Each variable was winsorized at the upper and lower 1% levels to control outliers.

The statistics present that 32% of the observations approximately have introduced flexible working hours, while 22% of the observations were using the policy. About 18% of total observations have introduced work from home, while only 11% of the samples practically made use of the program. 40% of the total 547 observations have adopted flexi-time, and 33% firms were utilizing the policy. Tele-work was the least introduced at only 13% of total observations, and only 7% were using the system in practice. ROA was on average 3.28%. The mean of debt ratio was 222.85%, and the mean value of sales growth was 6.12%.

**Table 2.** Descriptive Statistics

| Variables | Observations | Mean | SD | Min | Max |
|---|---|---|---|---|---|
| ROA | 497 | 3.28 | 6.91 | -10.82 | 19.47 |
| Flexible Working Hours | 547 | 0.32 | 0.47 | 0.00 | 1.00 |
| Work from Home | 547 | 0.18 | 0.38 | 0.00 | 1.00 |
| Tele-work | 547 | 0.13 | 0.33 | 0.00 | 1.00 |
| Flexi-time | 547 | 0.40 | 0.49 | 0.00 | 1.00 |
| Flexible Working Hours Utilization | 547 | 0.22 | 0.41 | 0.00 | 1.00 |
| Work from Home Utilization | 547 | 0.11 | 0.31 | 0.00 | 1.00 |
| Tele-work Utilization | 547 | 0.07 | 0.25 | 0.00 | 1.00 |
| Flexi-time Utilization | 547 | 0.33 | 0.47 | 0.00 | 1.00 |
| Debt | 461 | 222.85 | 299.31 | 14.45 | 1202.29 |
| Sales Growth | 484 | 6.12 | 14.43 | -19.83 | 40.86 |
| Size | 497 | 18.63 | 2.45 | 11.70 | 26.35 |
| Year | | | Included | | |
| Industry | | | Included | | |

Table 3 presents the Pearson correlation coefficients between the variables. Each independent variable was respectively included in the regression models. Therefore, the high correlation between FWAs does not cause any adverse effects. To detect any multicollinearity problems, we conducted a test of variance inflation factor (VIF). The VIFs of all variables did not reach the threshold, suggesting that there was no serious multicollinearity problem.

**Table 3.** Pearson Correlation Matrix

|                        | 1         | 2        | 3        | 4        | 5        | 6        | 7      | 9     |
|------------------------|-----------|----------|----------|----------|----------|----------|--------|-------|
| ROA                    | 1.000     |          |          |          |          |          |        |       |
| Flexible Working Hours | 0.096     | 1.000    |          |          |          |          |        |       |
| Work from Home         | 0.090     | 0.337*** | 1.000    |          |          |          |        |       |
| Tele-work              | -0.038    | 0.342*** | 0.500*** | 1.000    |          |          |        |       |
| Flexi-time             | 0.009     | 0.398*** | 0.267*** | 0.402*** | 1.000    |          |        |       |
| Debt                   | -0.249*** | -0.046   | -0.019   | 0.068    | -0.041   | 1.000    |        |       |
| Sales Growth           | 0.070     | 0.053    | 0.004    | 0.047    | -0.036   | 0.062    | 1.000  |       |
| Size                   | -0.292*** | 0.143**  | 0.069    | 0.260*** | 0.291*** | 0.393*** | 0.002  | 1.000 |

Note: *$p$<0.1, **$p$<0.05 and ***$p$<0.01.

## 2. Regression Results

Table 4 shows the empirical results of multiple regression analyses for the impact of FWAs on ROA. Models 1 to 4 in Table 4 show that flexible working hours, work from home, tele-work, and flexi-time were not significantly associated with ROA. The introduction of diverse work arrangements was not necessarily related to firm performance. Among control variables, debt ratio and firm size were negatively related to ROA, while sales growth was positively related. The empirical results imply that financial performance is not enhanced by the mere introduction of various work arrangements.

**Table 4.** Regression Estimates for the Impact of FWAs on ROA

|  | Model (1) ROA | Model (2) ROA | Model (3) ROA | Model (4) ROA |
|---|---|---|---|---|
| Flexible Working Hours | 1.026 (1.543) | | | |
| Work from Home | | 1.172 (1.418) | | |
| Tele-work | | | 0.059 (0.059) | |
| Flexi-time | | | | -0.398 (-0.601) |
| Debt | -0.003*** (-3.344) | -0.004*** (-3.419) | -0.004*** (-3.567) | -0.004*** (-3.643) |
| Sales Growth | 0.068*** (3.236) | 0.071*** (3.359) | 0.070*** (3.330) | 0.070*** (3.326) |
| Size | -0.405*** (-3.101) | -0.394*** (-3.036) | -0.374*** (-2.783) | -0.346** (-2.544) |
| Year | -0.247 (-0.770) | -0.226 (-0.706) | -0.177 (-0.550) | -0.135 (-0.415) |
| Industry | -0.017 (-0.179) | -0.026 (-0.275) | -0.004 (-0.045) | 0.011 (0.119) |
| Intercept | 509.970 (0.788) | 466.527 (0.724) | 368.845 (0.567) | 282.302 (0.431) |
| N | 451 | 451 | 451 | 451 |
| adj. R2 | 0.07 | 0.07 | 0.07 | 0.07 |
| F | 7.010 | 6.942 | 6.578 | 6.643 |

Note: t statistics in parentheses, $*p<0.1$, $**p<0.05$ and $***p<0.01$.

We also conducted additional regression analyses to verify the actual impact of utilization of these FWAs in practice. Table 5 reports the regression estimates of the impact of FWAs utilization on ROA. The utilization of work from home in Model 2 positively affected ROA. The other FWA utilizations such as flexible working hours, tele-work, and flexi-time were not significantly linked to firm performance. These results give evidence that work from home is currently an effective FWA that enhances firm performance.

The empirical results also verify that the introduction of various FWAs is not enough to enhance firm performance by themselves. What matters is the practical utilization of newly introduced working policies among employees.

**Table 5.** Regression Estimates for the Impact of FWAs Utilization on ROA

|  | Model (1) ROA | Model (2) ROA | Model (3) ROA | Model (4) ROA |
|---|---|---|---|---|
| Flexible Working Hours Utilization | 0.972 (1.266) | | | |
| Work from Home Utilization | | 2.673*** (2.741) | | |
| Tele-work Utilization | | | 1.457 (1.151) | |
| Flexi-time Utilization | | | | -1.101 (-1.547) |
| Debt | -0.004*** (-3.459) | -0.004*** (-3.418) | -0.004*** (-3.473) | -0.004*** (-3.807) |
| Sales Growth | 0.070*** (3.308) | 0.067*** (3.211) | 0.070*** (3.312) | 0.070*** (3.307) |
| Size | -0.410*** (-3.097) | -0.405*** (-3.149) | -0.423*** (-3.101) | -0.297** (-2.159) |
| Year | -0.244 (-0.756) | -0.262 (-0.828) | -0.227 (-0.709) | -0.063 (-0.193) |
| Industry | -0.022 (-0.230) | -0.045 (-0.481) | -0.024 (-0.251) | 0.040 (0.417) |
| Intercept | 503.411 (0.774) | 541.026 (0.846) | 470.958 (0.727) | 136.762 (0.208) |
| N | 451 | 451 | 451 | 451 |
| adj. R2 | 0.07 | 0.08 | 0.07 | 0.07 |
| F | 6.868 | 7.941 | 6.818 | 7.012 |

Note: t statistics in parentheses, *$p<0.1$, **$p<0.05$ and ***$p<0.01$.

Various corporate culture and structures among firms are likely to vary depending on the size of firms, thereby influencing the degree of utilization of diverse FWAs. Since we found differences in the influence of FWAs utilization on firm performance, we further intended to identify the different impacts of FWAs utilization according to relative firm size. Based on the median value, we categorized the samples into two groups of larger and smaller companies. Table 6 presents the influence of FWAs utilization on ROA according to firm size.

In Table 6, flexible working hour utilization was positively related to ROA for larger companies, while other FWAs remained insignificant on ROA. Conversely, work from home utilization had a positive impact on ROA for smaller companies, while flexi-time utilization had a negative impact. The results imply that work from home utilization remains effective FWA for employees, and that core working hours might be more crucial for these smaller companies where potential communication problems due to different commuting schedules could bring out more adverse effects than in larger firms.

**Table 6.** Regression Estimates for the Impact of FWAs Utilization on ROA Depending on Firm Size

| | Larger Companies | | | | Smaller Companies | | | |
|---|---|---|---|---|---|---|---|---|
| | Model (1) ROA | Model (2) ROA | Model (3) ROA | Model (4) ROA | Model (5) ROA | Model (6) ROA | Model (7) ROA | Model (8) ROA |
| Flexible Working Hours Utilization | 1.773** (2.044) | | | | -0.620 (-0.449) | | | |
| Work from Home Utilization | | -0.007 (-0.005) | | | | 4.585*** (3.055) | | |
| Tele-work Utilization | | | -0.019 (-0.015) | | | | 5.010 (1.559) | |
| Flexi-time Utilization | | | | 0.457 (0.532) | | | | -3.626*** (-2.970) |
| Debt | -0.004*** (-3.151) | -0.004*** (-3.632) | -0.004*** (-3.586) | -0.004*** (-3.243) | -0.004** (-2.138) | -0.003* (-1.726) | -0.004** (-2.005) | -0.004** (-2.249) |
| Sales Growth | 0.039 (1.532) | 0.044* (1.694) | 0.044* (1.696) | 0.044* (1.717) | 0.099*** (2.916) | 0.095*** (2.850) | 0.097*** (2.870) | 0.103*** (3.091) |
| Size | 0.062 (0.281) | 0.207 (0.963) | 0.208 (0.923) | 0.157 (0.675) | -0.535 (-1.215) | -0.619 (-1.443) | -0.544 (-1.251) | -0.643 (-1.493) |
| Year | -0.131 (-0.345) | 0.024 (0.064) | 0.025 (0.065) | -0.029 (-0.074) | -0.574 (-1.077) | -0.684 (-1.321) | -0.672 (-1.274) | -0.354 (-0.675) |
| Industry | -0.133 (-1.229) | -0.096 (-0.880) | -0.096 (-0.869) | -0.121 (-1.031) | 0.003 (0.017) | -0.064 (-0.406) | -0.029 (-0.180) | 0.063 (0.397) |
| Intercept | 265.977 (0.348) | -48.922 (-0.064) | -50.277 (-0.066) | 58.555 (0.075) | 1171.824 (1.090) | 1394.936 (1.335) | 1369.402 (1.287) | 730.750 (0.690) |
| N | 232 | 232 | 232 | 232 | 219 | 219 | 219 | 219 |
| adj. R2 | 0.07 | 0.05 | 0.05 | 0.05 | 0.04 | 0.08 | 0.05 | 0.08 |
| F | 3.748 | 2.996 | 2.996 | 3.046 | 2.694 | 4.331 | 3.094 | 4.239 |

Note: t statistics in parentheses, *$p<0.1$, **$p<0.05$ and ***$p<0.01$.

## V. Conclusion

The purpose of this paper is to verify the effectiveness of various types of FWAs and to provide implications on financial performance. To investigate whether FWAs were beneficial for firms in Korea, this study examined organizations as the unit of analysis and conducted multiple regression analyses to identify the relationship between FWAs and ROA to capture the practical influence of the arrangements.

The empirical results indicate that the introduction and utilization of various FWAs have different impacts on firm performance. The results demonstrate that the mere introduction of these programs does not enhance firm performance, and not all types provide desirable financial outcomes.

The practical utilization of work from home is likely to be the most efficient for enhancing firm performance. The result of this study is in line with the meta-analysis of telework of Brittany and MacDonnell (2012), who revealed small but positive impacts of work from home on the perceptions of organizational outcomes. The policy had the most positive effects among FWAs within a single-country context. For instance, Sands and Harper (2007) performed a study in the US and found that rather than compressed work week, flexi-time, and job sharing, work from home was positively associated with financial performance. Also, Meyer et al. (2001) reported similar results on work from home with negative effects of job sharing or compressed work week on profit. It is important to note that the insignificant result of Lee and Hong (2011) caution the generalization of the results to all other countries (Brittany & MacDonnell, 2012).

When we divided the sample into two groups based on firm size, the use of flexible working hours turned out to be influential for larger companies that are generally more vulnerable to rigid culture or structure. However, the use of flexi-time may sacrifice financial performance for smaller firms, implying that having core hours might be more crucial for these companies where potential communication problems due to different commuting schedules could bring out

adverse effects. The use of work from home may have benefitted smaller companies with relatively more compact teams or simpler structure, generating comparative advantages. Work from home could pose several challenges in terms of employee monitoring, work control, and visibility (Scalerandi, 2020), especially to larger companies. Further, women tend to favor work from home as a way of fulfilling work and family responsibilities (Sullivan and Smithson, 2007). Thus, we also conducted additional regression analyses to verify the impact of FWA on ROA depending on the gender of employees who practically utilize FWA. However, the impact of FWA utilization on ROA did not turn out to be significant in terms of gender.

This quantitative study did not explain the effects of different forms of FWAs or their detailed mechanisms from a qualitative point of view. There was also a limitation of access to updated data on firm performance and FWAs, since we used the published data from Korean Women's Development Institute's biennial survey.

The results suggest that there is a possibility to increase the efficiency of FWAs so as not to sacrifice financial performance. More useful implications can be obtained if future studies identify factors that strengthen or restrict the effectiveness of various arrangements. FWAs have the advantage of helping to alleviate work-family conflicts among organizational members by giving them autonomy over schedule management. However, as shown in the results of this study, the activation and actual use of this system can be helpful to a company's financial performance. There could be non-linear associations to be investigated. In addition, potential reasons at the individual level that FWAs were not activated include the blurring of the boundary between working hours and rest time, the decrease in efficiency due to the non-separation of workspace, the feeling of alienation due to lack of interaction, and the burden of work performance.

Other variables influencing the effectiveness of FWAs include organizational factors such as cultural norms and interpersonal factors such as social support from superiors and colleagues.

Suitability between industry characteristics and FWAs as well as the investment level for information and communication technology are also potential factors to influence the effectiveness of FWAs. Mediators between the arrangement and financial outcomes may include productivity, retention, and turnover, while moderators can be length of use and job characteristics (de Menezes & Kelliher, 2011). Therefore, future studies need to find ways to continuously improve not only work-life balance of employees but also the practical performance of companies by considering moderators and mediators to examine the advantages and limitations of FWAs.

The associations with FWAs and firm performance may change over time. As the pandemic forced companies to adopt FWAs, Korean firms were also inevitably using non-face-to-face work methods. Although this study analyzed the corporate data of a relatively limited period before the pandemic, future research will be able to extend the period and explore changes in institutional effectiveness by collecting and analyzing post-pandemic data and comparing the results with those of this study.

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# A Study on Personal Traits, Social Influences and, the Flow Experience of Video Conference Service Users

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## ABSTRACT

**Purpose –** Users utilize video conference services to enhance job performance. If they feel the flow experience while performing duties through video conferencing, they will continue to use the video conference service. The main purpose of this study is to comprehensively verify how the personal traits and social factors of video conference service users impact flow experience. In addition, it is necessary to understand the direct impact of technology readiness on flow to maintain the use intention of video conference service users.

**Design/Methodology/Approach –** Based on the hypotheses results, this study first identified the negative effect of technology readiness on perceived usefulness and the positive effect on perceived ease of use and flow experience. Second, both visibility and subjective norm factors showed direct impacts on perceived usefulness, but no impact on perceived ease of use. Lastly, all perception factors such as perceived usefulness and perceived ease of use, strongly influence flow experience.

**Findings –** This study combined fundamental theories, including flow theory, technology readiness, self-image congruence, social factors, and perception factors, to construct an integrated research framework. Furthermore, a total of 223 valid samples from users in South Korea that had used a paid video conference service were collected and analyzed.

**Research Implications –** The following are the primary theoretical implications of this study. Firstly, the current study extended the research subjects to not only students but also office workers and instructors; secondly, it determined the influential relationships between personality traits, social dimensions, and perceptions of users with flow experiences. Moreover, several practical implications are also suggested to introduce some methods of developing new potential clients and retaining existing customers for service providers.

*Keywords:* flow experience, perceived ease of use, perceived usefulness, self-image congruence, subjective norms, technology readiness, video conference service, visibility
*JEL Classifications:* M31, N70, O33

## I. Introduction

Covid-19 brought major changes to many parts of society, and as a result, the contactless era is in full swing, leading to non-face-to-face services being used in various fields (Yoon & Ko, 2022; Zhao & Park, 2021). The global video conference service market is predicted to expand from $9.790.2 million in 2021 to $21,907.2 million in 2026, according to a report recently published by Fairfield Market Research (Globe Newswire, 2021).

Many global companies monitor the overseas business progress of their subsidiaries and meet with international partners through video conferences, thereby reducing operating costs. Among the technologies developed due to the 4th industrial revolution, video conference services are no longer the exclusive property of global companies, but are now used by all of society. The reason for the rapid growth of the video conference service market is because, first, face-to-face work was suspended owing to Covid-19, and non-face-to-face work methods, such as video conferences, were utilized to fill the void. Second, video conference service technology has advanced sufficiently to replace face-to-face meetings in the digital native era, where technology has gained sufficient acceptance. A video conference service that allows convenient real-time meetings beyond the limits of time and space is expected to be a service that is continuously used in daily life, even after the pandemic is over (Shin, 2020).

Despite the steady development of the video conference service, related studies in academia have been primarily focused on case analysis (Hwangbo & Kim, 2021; Lim & Kim, 2010; Mpungose, 2021; Sutterlin, 2018), and empirical studies on user perceptions, attitudes, and behaviors regarding video conferences are rare. For companies that are competitively providing video conference services, it is most important to know which service users prefer, and which services they ultimately choose. In order to understand the decision-making process, this study first focuses on why users select specific video conference services. Fundamentally, users use a particular video conference to enhance job performance, and

if they feel the flow experience while performing duties through this service, they will continue to use the video conference service.

According to previous studies, flow is considered a significant antecedent factor in improving job performance. In the case of a new technology-based service, flow experience is confirmed to be associated with work performance (Park & Kang, 2021), and customer satisfaction (Deng et al., 2010; Ding et al., 2009), and directly affects future behavior (Sánchez-Franco, 2006).

Based on this, it appears reasonable to argue that flow is an important factor that has a direct impact on the business performance of video conference service users. If the flow is not felt and immersion is difficult while using a video conference service, a user may find it difficult to concentrate on work. For this reason, in an online environment, users must enter a flow state in order to maintain consistent work performance, and as the flow grows, so does work efficiency. Therefore, this study will identify and empirically analyze the antecedent factors of flow. The user's perception, including perceived usefulness and perceived ease of use, is a prime predictor of the user's attitude toward technology-based services and the intention to use video conference services as an antecedent factor that influences flow based on the recognition of the flow's importance (Davis, 1989; Davis et al., 1989; Joo et al., 2019). Users may find it hard to immerse themselves in a task if they do not appreciate the usefulness and convenience of video conference services.

As the importance of flow in the introduction and acceptance of new technologies has grown, many studies have been conducted to identify antecedent factors affecting flow. The results of the latest research show that the influencing factors of flow focus on the quality, function, and performance of technology (Wang et al., 2021; Zhu & Kim, 2020). However, even if the quality of technology meets the demands of users, users may not feel pleasure or may stop using the service. For example, in the study of factors affecting smartphone use by Park and Koh (2013), there has been a limitation to explaining the loyal usage and behaviors of smartphone

users simply with rationality or cognition-based theories such as the Technology Acceptance Model (TAM). To overcome the limitations of previous theories in explaining the adoption or usage of new information technologies, their study proposed an integrated framework that included the emotional viewpoint and emotional processes of smartphone users. Moon et al. (2021) also suggested that personal factors such as individual technical readiness and social influence factors are also found to be direct antecedents of flow. As a result, not only the functional aspect but also the emotional aspect of the video conference platform service must be taken into consideration to maintain high competitiveness.

Therefore, this study attempts to validate both the personal characteristics and social variables of video conference service users. Among personal factors, technology readiness, the concept that recognizes individual differences in the adoption of innovative technologies, can be selected as the first representative factor. This is because during the service selection process, the users tend to make different choices depending on the individual's technology readiness level. A video conference service that provides complicated functions may be rejected, and a video conference service that offers an effortless process may be adopted. Personal factors are found to have a substantial impact on the performance of information technology implementation from an academic standpoint (Moon et al., 2021), and as a result, technology-based service marketing strategies are gradually shifting to a user-centered approach (Buhalis & Sinarta, 2019; Leung, 2019). Because video conference service is based on cutting-edge technology, the degree to which users adapt to and accept new technology is a key aspect in evaluating perceived usefulness and ease of use.

Self-image congruence, the second personal factor, illustrates the cognitive concordance between the consumer's self-concept and the image of a specific service (Hosany & Martin, 2012; Sirgy, 1985). From the perspective of recent consumption trends, potential customers of new technology-based services are the young generation, called "millennials", who tend to have high loyalty to services that fit their own image (or self-concept) rather than modern trends (Byun & Jang, 2020; Kim et al., 2022). In the case of the video conference service, young people are more likely to accept the service faster than the elderly if it is deemed to match their image.

Furthermore, the term "social influence" refers to "the perceived pressure that an individual receives from important others to employ a new system" (Venkatesh & Brown, 2001, p.75), and consists of sub-concepts of subjective norms and visibility (Markus, 1987; Moore & Benbasat, 1991; Fishbein & Ajzen, 1975). Due to the fact that a video conference is recognized by society as a service that should be widely used, this study expects that these social factors not only affect user behavioral intention (Lee & Kim, 2005) but also have a decisive impact on flow state.

In summary, the primary goal of this research is to develop a theoretical research model to thoroughly test how personal factors (e.g., technology readiness and self-image congruence) and social factors (e.g., subjective norms and visibility) of video conference service, which impact flow experience through the two parameters of perceived usefulness and perceived ease of use. This is important because, as mentioned above, the flow state of video conference service users supports job performance. The second objective is to determine whether technology readiness directly affects the flow. With constant changes in technology, individuals have different levels of preparation for technology; as a result, it is critical to comprehend the direct influence of technological readiness on flow in order to maintain the use intention of video conference services.

## II. Literature Review

### 1. Flow Theory

Flow theory is one of the most widely used theories to explain and simulate human-technological system interactions (Sharif & Naghavi, 2020). This theory was first introduced by Csikszentmihalyi (1975) as a technical term to

describe an experience of user mental feelings and cognition when they fully concentrate on joining in a particular activity related to technology. Csikszentmihalyi also suggested that the key to understanding flow experience is the "autotelic experience" concept. This concept was defined as the outcome of a situation or activity that evokes its intrinsic motivation with no need for external reward (Oliveira et al., 2018). Users are only influenced by what they are doing when they are in a flow state. Concretely, these individuals tend to forget the surrounding environment, lose self-consciousness, and enter into a feeling that time passes quickly (Hsu & Lu, 2003).

Flow experience has also been verified as a primary factor that has a significant influence on people's feelings (Kim & Ko, 2019), psychological responses (Liu, 2020), and work or study performance (Chu & Lee, 2012; Mulik et al., 2020). As research on flow experience antecedents, Wang et al. (2021) analyzed the effect of Chinese live commerce Wanghong's characteristics on viewer flow and purchase intention. Their model was based on the S-O-R model and flow theory. They suggested that the professionalism, interactivity, and attractiveness of live commerce had a significant effect on flow. Flow was found to have a positive effect on purchase intention. Zhu and Kim (2020) examined the antecedents of flow and consequences of flow experience in online movie information sharing behavior. They argued that flow experience could create many opportunities, and it is important to identify factors that can enhance consumer flow experience. Movie information-seeking behavior and realistic telepresence are closely related to flow. In addition, the online flow experience affected consumer satisfaction and information sharing behavior. Moon et al. (2021) found the antecedents of flow and intention of use toward hotel technology-based self-service (TBSS). They concentrated on the customer technology readiness, expectations, social influence, and conditions facilitating the use of the TBSS system. Flow experience was positively affected by three factors except for social influence. Customer flow experience significantly impacted intention to use.

Previous studies tended to focus on service functions and personal skills as antecedent factors of flow experience. This is because, in most cases, researchers might not consider personality traits and social influence crucial parts of predicting flow state. However, with the influence of the pandemic and the change in the trend of millennials using technology services, it is hard to accurately predict feelings and behaviors of customers if only the functional aspects of the service are considered.

Furthermore, there are many cases of online instructors or young startups that have chosen and pay fees to use a particular video conference service in which personality traits and social influences (i.e., subjective norms, visibility) play a vital role in impacting the perceptions and emotions of users. This means individuals will feel more immersed in using video conference services to do tasks if they have a high level of technology readiness (Moon, 2019; Ferreira et al., 2014), perceive the service's functionalities (Lee et al., 2020; Wang et al., 2021), and realize the service's image appropriated to self-image (Cheng et al., 2016) and social needs (Kim & Park, 2020) at the same time, leading to great work outcomes.

According to recent research on technology systems and platforms, flow experience is verified as useful in understanding user adoption of using innovative technology in different contexts. Ju (2021), for instance, demonstrated positive impacts of ubiquity as a system characteristic, impulsivity, and playfulness as personal characteristics on flow experience, and proved that the intention to use mobile home shopping was directly influenced by the flow experience. Kim and Kim (2018) explained that challenging consciousness and skills levels can predict flow to determine the elements that influence Vietnamese consumer behavior when making cross-border mobile purchases. In subsequent work, they confirmed the strong relationship between flow and use behavior.

Based on these theoretical backgrounds, the present study defines flow experience as the state of a user focused on a task throughout video conference meeting, and propose that flow experience is a useful measure of user behavioral intention as they participate in video conferences.

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## 2. Technology Readiness

According to Parasuraman's (2000, p. 308) study, technology readiness is described as "an individual's tendency to embrace and use advanced technologies for achieving goals in home and work life". It is composed of four components: optimism, innovativeness as contributory aspects, and discomfort and insecurity as inhibitory aspects. Specifically, optimism and innovativeness arouse positive emotions toward new technologies, which in turn impact the promotion of adoption or use of technology-based services. In contrast, discomfort and insecurity are factors associated with negative emotions that influence reluctance to use new technologies (Parasuraman & Colby, 2001; Park, 2019).

Technology users have different levels of tolerance in evaluating services (Wang et al., 2017). Many scholars determined that an individual's technology readiness level significantly impacts his or her assessment of technologies and services. For example, Kim and Kang (2021) investigated how technology readiness affects perceived usefulness and ease of use, and then concluded that technology readiness directly influences these two perceived factors. In Jeong et al.'s (2018) study, it was demonstrated that only positive technology readiness has a direct impact after separating it into positive and negative elements to explain its influence on perceived usefulness, perceived ease of use, and usage intention of smartphone tourism.

On the other hand, some researchers have proposed that it is unnecessary to classify the sub-dimensions of technical readiness into four dimensions due to the fact that only positive factors have relatively a significant effect (Liljander et al., 2006; Lin & Chang, 2011; Moon, 2019). Liljander et al. (2006), for instance, determined that only positive technology readiness factors as antecedent factors for attitude and behavioral intention of self-service technologies customers. Moon's (2019) research also verified that positive technology readiness, including optimism and innovativeness, has a significant impact on the flow and attitude of TBSS (Technology-based self-service) users.

Based on previous studies, this study expects that the effect of positive technology readiness will also support users to become immersed in the usage of a video conference platform due to perceiving that its system is useful and simple.

## 3. Self-Image Congruence

A particular product and service also have personality attributes as people do, which can be determined by numerous elements, including price, advertising, and stereotypes of users in general (Kang et al., 2009; Sirgy, 1985). Customers embrace technology-based services by comparing their image to their own values, beliefs (Rogers, 1983; Ha & Hwang, 2021), and self-concepts, including ideal self, actual self, social self, and ideal social self (Hosany & Martin, 2012). Through this matching process, the judgment of self-image congruence is made. In other words, a given service will be evaluated positively as a high self-image congruence if customers recognize that its image is identical to their own image (Kim et al., 2010).

Several researchers have confirmed that the congruence of one's self-image has a significant impact on his or her inclination to utilize and adopt technology-based services (Antón et al., 2013; Kang et al., 2009; Kleijnen et al., 2005). According to Kleijnen et al. (2005), a consumer's self-concept, including ideal and actual self-image, can be used to affect attitudes and intentions to adopt mobile services. The study of Kang et al. (2009) has suggested direct effects of self-image congruence on customer perceptions.

Accordingly, it seems reasonable for this study to presume that the self-image congruence of video conference service users might impact the perception of the service. That is, when people have perceived high self-congruence between their own image with a specific video conference platform, they are more likely to consider the service to be useful and simple to use.

## 4. Social Factors: Subjective Norm and Visibility

Numerous core theories are introduced in terms of innovative solution adoption research, such as

the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Acceptance Model III (TAM-3), and so on. These theories share a common point that can be used to identify components of social influence. Subjective norm and visibility are two key components that make up social influence (Moore & Benbasat, 1991; Fishbein & Ajzen, 1975).

First, subjective norm was initially proposed through TRA theory, which is defined as "the individual's perception of a referent other's opinion about the individual's performance of the behavior" (Fishbein & Ajzen, 1975, p. 302). Since then, subjective norm has been applied in various studies as a major concept of social influence and a leading factor affecting behavioral intentions (Davis et al., 1989; Kim, 2015; Venkatesh et al., 2003). Subsequently, from Moore and Benbasat's (1991) research, we can see another factor of social influence, visibility, which refers to "the degree to which the innovation is visible in the organization" (Moore & Benbasat, 1991, p. 195). Users tend to accept a particular technology or technology-based service easily if it is widely used (Yang & Choi, 2001).

Based on the theoretical frameworks presented, this study includes these core elements of social influence as independent variables in the research framework to demonstrate the relationship between social influence factors and video conference user flow experience via perceived usefulness and ease of use.

## 5. Perceived Usefulness and Perceived Ease of Use

Perceived usefulness and perceived ease of use are two key factors that are mentioned for the first time in the research of Davis (1989). Various empirical research has concluded that these elements play an important role in users' acceptance of new innovative technology as an aid in executing a task (Davis, 1989; Davis et al., 1989; Joo et al., 2019). These two constructs are affected by external variables (Chang et al., 2017), and the perceived ease of use was also found to influence the perceived usefulness of technology (Masrom, 2007).

Perceived usefulness refers to "the degree to which a person believes that using a particular system would enhance his or her job performance", and perceived ease of use is defined as "the degree to which a person believes using a particular system would be free of effort" (Davis, 1989, p. 320). In the context of video conferencing, if a user believes that a video conference service plays a remarkable role in improving the efficiency of interactive activities, this will positively affect his or her attitude toward this service. Furthermore, when a video conference service's system does not require complicated operational skills and allows users to enjoy its efficiency, it will be perceived as simple to use by people.

Regarding previous research, Bailey et al. (2022) explained how perceived usefulness and perceived ease of use influence the intention and actual use of the Zoom meeting platform in English classes of South Korean university students. Han and Sa's study (2021) looked into the current state of online course acceptability in Korean colleges and found that the perceived ease of use of online tools was a powerful precursor to perceived usefulness and satisfaction of students. Finally, looking at the study on employees' acceptance of teleconferencing systems, Park et al. (2014) depicted additional factors such as anxiety, self-efficacy, institutional support, and voluntariness as considerably related to perceived usefulness, perceived ease of use, and actual use of the systems.

However, relatively few studies based on these two factors are available to examine the flow state of the video conference service's users. Thus, the present study tries to confirm the relationship of these perception factors on flow.

## III. Research Model and Hypotheses

### 1. Direct Effects of Technology Readiness on Perception Factors and Flow Experience

Reviewing previous research, technology readiness has been introduced in a new model,

called "the Technology Readiness and Acceptance Model (TRAM)". This model clarifies how personality traits influence perceptions of technology, leading to influences on experience, interaction, and adoption of technology (Lin et al., 2007). Thus, people who have greater optimistic and innovative viewpoints will consider a particular technology to be more useful and less complicated, resulting in the fact that they are less concerned with possible negative outcomes (Lin & Chang, 2011; Walczuch et al., 2007).

Additionally, the technology readiness level of users directly decides the perception of ease of use for technology-based services (Lin & Chang, 2011; Lin et al., 2007). For instance, research by Godoe and Johansen (2012) has found that dimensions of technology readiness such as optimism and innovation significantly affected perceived ease of use as well as perceived usefulness in adopting new technologies. In other research, Yoon et al. (2015) revealed that consumers that had greater technology readiness were more confident and optimistic when using online shopping sites, resulting in a positive perception of site usefulness and ease of use.

Based on prior methods and research, this study chooses optimism and innovativeness as the main components of technology readiness, and proposes that users with higher technology readiness will be more likely to perceive the service of video conference platforms as useful and easy to use, resulting in the following hypotheses.

**H1a:** Technology readiness positively affects the perceived usefulness of video conference platforms.

**H1b:** Technology readiness positively affects the perceived ease of use of video conference platforms.

As mentioned above, previous high-tech-related studies have confirmed that positive levels of user technology readiness (including optimism and innovativeness) profoundly affect attitudes, behavioral intentions, and states of flow (Lin & Chang, 2011; Liljander et al., 2006; Moon, 2019; Ferreira et al., 2014). Meanwhile, the myth that young people always have a positive attitude toward technology-based service is strengthened due to the fact that they have grown up in the digital age with diverse technological innovations. However, the research of Clyde et al. (2020) determined that the self-efficacy of millennials learners in general social and academic interactions will be at a low level if they are less ready with technology. Therefore, the current study seems reasonable to set technology readiness as an antecedent that directly affects flow experience, leading to an established the following hypothesis.

**H1c:** Technology readiness positively affects the flow experience of video conference platform users.

## 2. Impact of Self-Image Congruence on Perception Factors

Self-congruence occurs when perceptions of a product or service match self-image (Sirgy et al., 1991). In the field of technology-based innovations and online interaction, the image of these services intimately relates to the individual's perception that using the new technology would enhance work performance in an effort-free manner (Kang et al., 2009). In other words, perceived usefulness and ease of use are expected in terms of the functional attributes of the service.

If the compared process between self-concept and perception of function results in a high level of self-image fit, users might develop an initial favorable perspective toward technology-based services. Eventually, this strong self-image congruence is likely to positively influence users to process the functional attributes of these services. In contrast, a user that experienced a low self-congruity might form an initial unfavorable viewpoint which in turn biases his or her perceptions in a negative way toward the functional characteristics of the service (Kang et al., 2015; Sirgy et al., 1991). Moreover, the effect of self-image congruence on the perception of service and product has been identified in previous literature (Kang et al., 2015; Kressmann et al., 2006; Sirgy et al., 1991). According to the above

notion, this study deduces that the self-image congruence of the users will influence estimations of the video conference service's perceived usefulness and perceived ease of use. Based on this, the following hypotheses are created.

**H2a:** Self-image congruence positively affects the perceived usefulness of video conference platforms.
**H2b:** Self-image congruence positively affects the perceived ease of use of video conference platforms.

### 3. Influence of Subjective Norm and Visibility on Perception Factors

Individuals may select services based on their own favorites and desires, but their judgments and decisions are also affected by other people and norms (Yi & Chon, 2020). In this study, subjective norm refers to a degree to which the opinions of friends, colleagues, or seniors affect an individual's judgment and his/her adoption of video conference services. Based on previous studies, the subjective norm was proposed to have a significant effect on perceived usefulness (Bonn et al., 2016; Ryu & Choi, 2008). Furthermore, Teo (2009) confirmed that subjective norm has a positive effect on the perceived ease of use and usefulness in the computer use of teachers. A study by Yi and Chon (2020) has supported this viewpoint and proved that the subjective norm is a core factor in user decisions to use OTTs continuously. From the above discussion, the subsequent hypotheses were proposed.

**H3a:** Subjective norm positively affects the perceived usefulness of video conference platforms.
**H3b:** Subjective norm positively affects the perceived ease of use of video conference platforms.

On the other hand, visibility is defined as the degree to which an innovation is visible in a specific environment (Moore & Benbasat, 1991). Individuals are likely to adopt a technology-based service depending on how frequently they see surrounding people using it. Similar to the case

of other technological services, the increasing visibility of a video conference can create positive perceptions of the service. While visibility is not able to directly enhance the actual value of the functional characteristics of a video conference, it may help users to perceive these features as more useful as well as easy to use (Thong et al., 2002). Some prior studies have determined that visibility positively influences perceived usefulness (Bonn et al., 2016; Moore & Benbasat, 1991; Thong et al., 2002) and perceived ease of use (Oh et al., 2003). Accordingly, the current study inferred the following hypotheses.

**H4a:** Visibility positively affects the perceived usefulness of video conference platforms.
**H4b:** Visibility positively affects the perceived ease of use of video conference platforms.

### 4. Relationships between Perception Factors and Flow Experience

Davis (1989) proposed that perceived ease of use is a powerful factor influencing perceived usefulness through a theoretical framework, called the TAM model. Based on this, several recent studies, from the field of smart devices technologies (Agustina et al., 2021; Choi, 2011; Ismail, 2016) to innovative technology-based services in general (Nagy, 2018; Park & Kang, 2021; Yun et al., 2021) have been made to prove the relationship between these two variables. This study focuses on the services of the video conference platform, which help users with group meetings, learning, and the completion of other different tasks via a contactless environment. Thus, we create a hypothesis related to a path from perceived ease of use to perceived usefulness as [H5a] to verify this relationship in the field of the aforementioned service.

**H5a:** Perceived ease of use positively affects the perceived usefulness of video conference platforms.

On the other hand, the constraints of video conference technologies such as complicated functions and uncomfortable virtual interfaces lead to difficulties for users to operate the service

(Hwangbo & Kim, 2021). Useful and easy-to-use platforms with refined mechanisms and well-designed interfaces will create opportunities for users to experience a state of immersion, which is strongly related to flow (Guo & Poole, 2009; Lowry et al., 2013). The effect of perceived usefulness on flow experience has been proven in previous research. For instance, the study of Woo and Lee (2010) on satisfaction with online travel company websites analyzed that perceived usefulness affects flow. Ahmad and Abdulkarim (2019) also found that perceived usefulness complements the flow experience in the virtual world. Additionally, perceived ease of use was confirmed to have a significant impact on flow experience in the use of smartphone games (Joo, 2016) and mobile banking technology (Zhou, 2012). Hence, the following hypotheses are proposed.

**H5b:** Perceived ease of use positively affects the flow experience of video conference platform users.
**H6:** Perceived usefulness positively affects the flow experience of video conference platform users.

## 5. The Research Model

This study empirically investigated users with experience with paid video conference services and attempted to clarify the influences of the antecedent factors on flow experience. Technology readiness and self-image congruence are two factors that explain personality traits; however, subjective norm and visibility are two factors that explain social influence. Based on previous literature reviews and hypotheses, this research proposes the theoretical model shown in Fig. 1.

**Fig. 1.** Theoretical Model
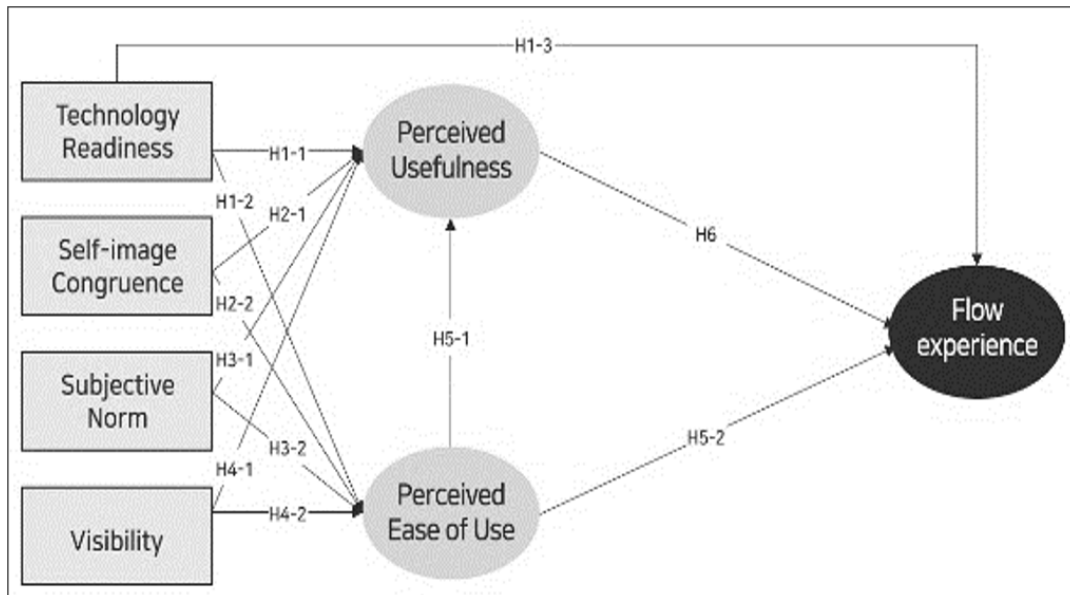


## IV. Research Methodology

### 1. Sampling and Data Collection

The primary subject of this analysis was video conference service users in South Korea, particularly office workers, online instructors, and undergraduate students with experience with paid versions. Due to the impact of Covid-19, working from home, teaching online, or training remotely

**Table 1.** Demographic Profiles of Respondents

| Variables (N=223) | Characteristics | Frequency | Percent (%) |
|---|---|---|---|
| Name of Platform | Zoom | 137 | 61.4 |
| | Cisco WebEx | 41 | 18.4 |
| | Google Meet | 28 | 12.6 |
| | Microsoft Teams | 10 | 4.5 |
| | Others | 7 | 3.1 |
| Gender | Male | 92 | 41.3 |
| | Female | 131 | 58.7 |
| Age Group | 20-29 | 173 | 77.6 |
| | 30-39 | 37 | 16.6 |
| | 40-49 | 9 | 4.0 |
| | 50-59 | 4 | 1.8 |
| Education Level | Undergraduate and associate degree | 187 | 83.9 |
| | Graduate school degree | 36 | 16.1 |
| Period of Use | Less than 1 year | 3 | 1.3 |
| | 1 year – 2 years | 213 | 95.6 |
| | More than 2 years | 7 | 3.1 |
| Use Frequency | 1-2 times per week | 182 | 81.7 |
| | 3-4 times per week | 38 | 17.0 |
| | 5 or more times per week | 3 | 1.3 |
| Use Purpose | Working | 105 | 47.1 |
| | Teaching | 94 | 42.2 |
| | Learning | 18 | 8.0 |
| | Other | 6 | 2.7 |
| Occupation | Office Worker | 105 | 47.1 |
| | Instructor | 94 | 42.2 |
| | Undergraduate Student | 24 | 10.7 |

via video conference services became common. Thus, this study determines these users to be the core users of the service and good representatives of the target market. A preliminary survey of 27 undergraduate students was conducted to improve validity and reliability. We revised some contents based on the preliminary survey and employed the edited questionnaire in the main survey.

Furthermore, to avoid bias in sampling techniques, this study implemented two independent data collection approaches during the period from January 20 to February 28, 2022, in South Korea. Firstly, offline, the snowball sampling method was employed for data collection

from users that paid fees to do work through video conference platforms such as Zoom, Cisco Webex Meetings, and others. More specifically, 7 office workers, 5 online instructors, and 4 undergraduate students were contacted and asked to refer other users that worked with the paid version of a video conference to participate in the survey. Secondly, by sharing the online survey link with a full explanation of the research purpose on randomly selected online multi-purpose (working, learning, etc.) communication sites, this study completed the random sampling step in data collection. The demographic features of the survey respondents are shown in Table 1.

On the first page of the questionnaire, two screening questions were applied, including [1] "Have you ever used the paid version of a video conference platform?", and [2] "What video conference platform do you mainly use?". The first question was aimed to ensure research participants were appropriate for the purpose of this study. The second question was set to arouse the accurate perception of each participant toward video conference services that they mainly use before answering the survey questions. Consequently, a total of 235 surveys were collected, and among these, 223 surveys (including 116 offline, and 107 online) were finally used for empirical analysis, excluding 12 surveys with insincere responses.

Because typical sample size calculation rules (e.g., power, effect size, or minimal sample size) ignore the study model's specifications (Wolf et al., 2013; Kim, 2021), it is important to use a measurement model's aspects to calculate the sample size for decreasing errors. Therefore, this study calculated the minimum sample size to detect the effect through a-priori sample size calculator for structural equation models. Specifically, we determined the expected effect size to be 0.3 (medium), the intended statistical power level to be 0.8, the number of latent variables to be 7, the number of observable variables to be 29, and the probability level to be 0.05 (Dattalo, 2009) and got a result of the minimum recommended sample size: N=170. We can thus conclude that the sample size was appropriate as it (N=223) was greater than 170.

## 2. Measures

The variables used in this study are measurement items whose reliability and validity have been verified in previous studies, and some questionnaire items were changed to fit the field of video conference platforms. According to the empirical results of the exploratory factor analysis, one item was eliminated from the pilot test of the 27 students described above, and the item wordings were modified based on expert and participant comments. As a result, the scale of this questionnaire was determined to be 29 items for 7 dimensions of all variables.

More specifically, items of all constructs were measured on a Likert 7-point rating scale from "Completely disagree = 1" and "Completely agree = 7". There were eight items for two social factors as subjective norm (4 items) and visibility (4 items), and nine items for two personal factors include self-image congruence (3 items) and technology readiness (6 items). There were four items for each of perceived usefulness, perceived ease of use, and flow experience. Based on various previous studies, the questionnaire questions were modified and constructed according to the topic and subject of this study. For this reason, the content of each question may not be completely identical to the prior research.

Finally, the items in this questionnaire were randomly arranged to control for variance in the common method. The contents are summarized in Table 2.

## V. Results of Empirical Analysis

### 1. Analysis of Validity and Reliability

Cronbach's alpha values were employed to demonstrate reliability in the current study. Generally, this value must be higher than 0.7 in order to be regarded as dependable (Fornell & Larcker, 1981). In fact, Subjective Norm (.941), Visibility (.926), Self-image Congruence (.944), Technology Readiness (.940), Perceived Usefulness (.906), Perceived Ease of Use (.876), and Flow Experience (.914) are all greater than 0.7. These results show that the questionnaire data's reliability is adequate and suitable for further analysis. The result is shown in Table 3.

**Table 2.** Survey Questionnaire Items

| Variables | | No. | Items | Related Research |
|---|---|---|---|---|
| Subjective Norm | | SN1 | People who affect my behavior believe I should utilize it. | Rejón-Guardia et al. (2020); Venkatesh et al. (2003) |
| | | SN2 | People who affect my behavior encourage me to use it. | |
| | | SN3 | People who affect my behavior prefer me to use it. | |
| | | SN4 | People who affect my behavior support my use of it. | |
| Visibility | | VI1 | I often see people around me using it. | Moore and Benbasat (1991) |
| | | VI2 | Most of the people I know use it. | |
| | | VI3 | The platform that I use has the highest market share | |
| | | VI4 | Few people use other platforms than the one I use. | |
| Self-Image Congruence | | IM1 | This service will improve my image. | Kang et al. (2015); Kressmann et al. (2006) |
| | | IM2 | This service reflects my value well. | |
| | | IM3 | This service matches the innovative leading image I pursue. | |
| Technology Readiness | Optimism | TR1 | I feel that new technological items or services will enhance my quality of life. | Lin and Hsieh (2006); Liljander et al. (2006); Parasuraman (2000) |
| | | TR2 | I believe new technological items or services will give me more freedom. | |
| | | TR3 | I think that using new technological items or services is desirable. | |
| | Innovative-ness | TR4 | I tend to use the most recent technologies more than the people around me. | |
| | | TR5 | I can use new technological items or services without assistance. | |
| | | TR6 | I appreciate experimenting with new technological items or services. | |
| Perceived Usefulness | | PU1 | This platform is useful. | Davis (1989); Rejón-Guardia et al. (2020) |
| | | PU2 | This platform fits my lifestyle. | |
| | | PU3 | This platform increases the standard of my life. | |
| | | PU4 | I can use this platform to process my task efficiently. | |
| Perceived Ease of Use | | PEU1 | This platform is easy to use. | Davis (1989); Rejón-Guardia et al. (2020) |
| | | PEU2 | This platform can easily add the tools that I want. | |
| | | PEU3 | This platform is simple so that it can be used without instructions. | |
| | | PEU4 | This platform can be used directly by accessing the site without installing any programs. | |
| Flow Experience | | FL1 | I feel pleasure while using it. | Csikszentmihalyi (1975); Sharif and Naghavi (2020) |
| | | FL2 | I feel time flies quickly while using it. | |
| | | FL3 | I do not care about other things while using it. | |
| | | FL4 | I feel immersed while using it. | |

**Table 3.** Confirmatory Factor Analysis and Reliability Analysis

| Variables | No. | Exploratory Factor Analysis | | | | Cronbach's α | Confirmatory Factor Analysis | | |
| | | Factor loading | Extraction | Eigen value | Cumulative % | | CR | AVE | MSV |
|---|---|---|---|---|---|---|---|---|---|
| Subjective Norm | SN1 | .825 | .873 | | | | | | |
| | SN2 | .843 | .871 | 6.388 | 49.441 | .941 | .942 | .802 | .475 |
| | SN3 | .861 | .857 | | | | | | |
| | SN4 | .854 | .825 | | | | | | |
| Visibility | VI1 | .805 | .845 | | | | | | |
| | VI2 | .812 | .859 | 3.043 | 59.936 | .926 | .928 | .762 | .475 |
| | VI3 | .816 | .824 | | | | | | |
| | VI4 | .793 | .786 | | | | | | |
| Self-Image Congruence | IM1 | .932 | .894 | | | | | | |
| | IM2 | .948 | .926 | 1.068 | 80.747 | .944 | .944 | .850 | .095 |
| | IM3 | .929 | .884 | | | | | | |
| Technology Readiness | TR1 | .879 | .809 | | | | | | |
| | TR2 | .855 | .764 | | | | | | |
| | TR3 | .880 | .816 | 7.950 | 27.412 | .940 | .940 | .723 | .188 |
| | TR4 | .858 | .765 | | | | | | |
| | TR5 | .860 | .757 | | | | | | |
| | TR6 | .832 | .733 | | | | | | |
| Perceived Usefulness | PU1 | .776 | .817 | | | | | | |
| | PU2 | .785 | .794 | 1.109 | 77.063 | .906 | .907 | .710 | .457 |
| | PU3 | .816 | .810 | | | | | | |
| | PU4 | .711 | .730 | | | | | | |
| Perceived Ease of Use | PEU1 | .794 | .726 | | | | | | |
| | PEU2 | .844 | .779 | 2.604 | 68.916 | .876 | .880 | .649 | .415 |
| | PEU3 | .835 | .797 | | | | | | |
| | PEU4 | .765 | .647 | | | | | | |
| Flow Experience | FL1 | .764 | .803 | | | | | | |
| | FL2 | .820 | .793 | 1.253 | 73.238 | .914 | .915 | .730 | .415 |
| | FL3 | .840 | .824 | | | | | | |
| | FL4 | .821 | .809 | | | | | | |
| KMO(Kaiser-Meyer-Olkin) | | | | | | | | .892 | |
| Bartlett' Test of Sphericity | | | | Chi-Square | | | 5515.246 | | |
| | | | | df(p) | | | 406(.000) | | |

Notes: 1. Criteria: CR>0.7, AVE>0.5, MSV<AVE.
      2. AVE: Average Variance Extracted, CR: Composite Reliability, MSV: Maximum Shared Variance.

This study first used SPSS 25.0 to validate exploratory factor analysis (EFA) in order to find the conceptually underlying dimensions of variables and examine validity. Second, discriminant validity and convergent validity were determined by conducting confirmatory factor analysis (CFA) with AMOS 26.0.

In factor analysis, this study employed the principal components analysis (PCA) with Varimax rotation to avoid multicollinearity and minimize the number of factors and loss of information.

The exploratory factor analysis (EFA) result revealed seven factors based on eigenvalues more than 1, similar to the findings of prior pilot testing. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 0.892; a value greater than 0.7 is preferable (Morgan, 2007). Bartlett's Test of Sphericity as 5515.246, the degree of freedom was 406, and the p-value is significant (p<0.001). According to certain criteria, the overall variation explained by all components should range between 70% and 80% in order to guarantee a suitable EFA model. The seven-component solution in this study explained 80.747% of the total variance overall, and thus, it fits with the standard. The factor loading of each item in seven types is greater than 0.5, which is significant to ensure conceptual validity.

Following that, confirmatory factor analysis (CFA) was performed on the measured variables derived because of the exploratory factor analysis. CFA is a statistical tool used to assess the validity of a scale and research model. Therefore, we can derive more precise results from reliability, validity, and uni-dimensionality via CFA. The results of this CFA likewise confirmed reliability. According to the criteria presented by Fornell and Larcker (1981), first, the standardized coefficient, which is the effect of the latent variable on the observed variable, must be greater than 0.5. Second, composite reliability (CR) was utilized as a metric for factor internal consistency, with a value greater than 0.7 indicating strong reliability. Third, the average variance extraction (AVE) should be 0.5 or more. In addition, the discriminant value is obtained when the average variance extracted (AVE) exceeds the maximum shared variance (MSV) (Almén et al., 2018; Hair et al., 2010). The findings of this research reveal that all criteria stated were met. This study also compared the square root of the average variance extracted (AVE) with the correlation of latent constructs and determined that the square root of each construct's AVE has a higher value than the correlations with other latent constructs (Fornell & Larcker, 1981). The results of discriminant validity and the correlation matrix are shown in Table 4.

**Table 4.** Discriminant Validity and Correlation Matrix

| Factor | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. IM | .922 | | | | | | |
| 2. SN | .091 | .896 | | | | | |
| 3. VI | .279** | .639** | .783 | | | | |
| 4. TR | -.003 | -.066 | -.081 | .850 | | | |
| 5. PU | .204** | .605** | .624** | -.159* | .843 | | |
| 6. PEU | -.024 | .109 | .117 | .221** | .274** | .805 | |
| 7. FL | .048 | .039 | .115 | .402** | .210** | .582** | .855 |

Note: *p*-value: *<0.05 and **<0.01, Diagonals (in bold) reflect the square root of AVE.

## 2. Analysis of Model Fit

Before conducting the hypothesis test, a goodness-of-fit test was performed on the structural model. The fitness indices are suitable for all levels, and therefore, the measurement model is excellent. As shown in Table 5, the results are CMIN($\chi^2$) = 429.102 (df = 359, p = 0.006), CMIN($\chi^2$)/df = 1.195, the standardized root mean square residual (RMSEA) = 0.03, normed fit index (NFI) = 0.926, incremental fit index (IFI) = 0.987, Tucker-Lewis's index (TLI) = 0.985, and comparative fit index (CFI) = 0.987.

**Table 5.** Model Fit Results

| Index | CMIN($\chi^2$) | CMIN($\chi^2$)/df | RMSEA | GFI | AGFI | NFI | IFI | TLI | CFI |
|---|---|---|---|---|---|---|---|---|---|
| Results | 429.102 (.006) | 1.195 | 0.03 | 0.883 | 0.859 | 0.926 | 0.987 | 0.985 | 0.987 |
| Criteria | p$\leq$0.05 | 1.0$\leq\chi^2$/df$\leq$2.0 | $\leq$0.05 | $\geq$0.8-0.9 | $\geq$0.85 | $\geq$0.9 | $\geq$0.9 | $\geq$0.9 | $\geq$0.9 |

When considered jointly, these final indexes suggest a satisfactory fit of the proposed model to the data (Hair et al., 2010). In the case of the goodness-of-fit index (GFI), the value is 0.883 which is close to 0.9 and can be accepted (Schumacker & Lomax, 2016). On the other hand, the adjusted goodness-of-fit index (AGFI) is 0.859, which is higher than 0.85 and is good (Schermelleh-Engel et al., 2003).

## 3. Hypothesis Tests

An AMOS 26.0 path analysis was used to empirically test the hypotheses stated, and the findings are shown in Table 6.

With the purpose of understanding the impact of latent variables, the regression weight is used to consider the Relative Weights, and Standard Error (S.E.) was employed to check the accuracy of the parameters. Moreover, whether the hypotheses were accepted or not was judged by the significance level (p-value) associated with the value of C.R. (Critical Ratio). That is, in a two-sided test, a C.R. greater than 1.96 is significant at a p-value of 0.05, and a value greater than 2.58 is considered significant at 0.01.

As a result of testing the research hypotheses, this study first discovered that technology readiness has a negative (-) effect on perceived usefulness ($\beta$ = -0.153), and positive influence on perceived ease of use ($\beta$ = 0.163) and flow experience ($\beta$ = 0.280). Meanwhile, self-image congruence does not appear to affect perceived usefulness as well as perceived ease of use at all.

Second, both subjective norm and visibility factors showed direct positive (+) effects on perceived usefulness with the $\beta$-value, by 0.299 and 0.318, respectively, but no impact on perceived ease of use.

Third, the study also verified that all hypotheses for relationships between perceived usefulness, perceived ease of use, and flow experience were accepted, in which perceived ease of use strongly affected flow experience with $\beta$ = 0.704, and perceived usefulness positively affected flow experience with $\beta$ = 0.119.

## VI. Discussions

### 1. Summary

This study introduced an integrated research model to offer theoretical and managerial implications for the providers of video conference

**Table 6.** Structural Analysis Results

| Hypothesis | Path | | | Path Coefficient | S.E. | C.R. | p-Value | Result |
|---|---|---|---|---|---|---|---|---|
| H1a | TR | → | PU | -.153 | .046 | -3.308 | *** | Supported |
| H1b | TR | → | PEU | .163 | .047 | 3.445 | *** | Supported |
| H1c | TR | → | FL | .280 | .052 | 5.347 | *** | Supported |
| H2a | IM | → | PU | .099 | .059 | 1.673 | .094 | Rejected |
| H2b | IM | → | PEU | -.055 | .061 | -0.898 | .369 | Rejected |
| H3a | SN | → | PU | .299 | .064 | 4.685 | *** | Supported |
| H3b | SN | → | PEU | .017 | .064 | 0.261 | .794 | Rejected |
| H4a | VI | → | PU | .318 | .073 | 4.351 | *** | Supported |
| H4b | VI | → | PEU | .105 | .074 | 1.424 | .154 | Rejected |
| H5a | PEU | → | PU | .364 | .078 | 4.644 | *** | Supported |
| H5b | PEU | → | FL | .704 | .100 | 7.044 | *** | Supported |
| H6 | PU | → | FL | .119 | .060 | 1.983 | .047 | Supported |

Notes: 1. *p*-value = *** < 0.001.
       2. S.E.: Standard Error; C.R.: Critical Ratio.

services, especially in the Korean market. Furthermore, the result of this study is expected to provide operational strategies from a user-centered perspective to maintain competitive advantages to these providers. We conducted an empirical analysis on the relationship between personal characteristics (i.e., technology readiness, self-image congruence), social characteristics (i.e., subjective norm, visibility), perceived usefulness, perceived ease of use, and flow experience felt by the users of the service. The study results are summarized as follows.

Firstly, this study confirmed that, although technology readiness has a positive effect on both the perceived ease of use and flow experience, unexpectedly, it shows a negative effect on perceived usefulness. According to analysis results, individuals with a high level of optimism and innovativeness can strongly perceive the

ease of use of the service; as a result, they feel much more at ease with the flow. This result can support the verified argument of previous research (Godoe & Johansen, 2012; Lin & Chang, 2011; Moon, 2019; Ferreira et al., 2014; etc.). The empirical result also showed that the higher level of technical readiness, the less care about the usefulness of video conference services. This result is inconsistent with the findings by Lin and Chang (2011), Lin et al. (2007), Sun et al. (2020), and Walczuch et al. (2007), in which technology readiness has a positive effect on perceived usefulness.

Possible reasons for this negative effect of technology readiness could be because of the difference in innovation level and innovation acceptance time of research participants. According to the Theory of Diffusion Innovation, there are many types of customers, including 2.5%

innovators and 13.5% early adopters that show a high level of innovativeness (Rogers, 1983). The hype cycle model of Gartner Inc., additionally, explains a generally applicable path a technology takes in terms of expectations or visibility of the value of the technology in relation to time (Fenn & Linden, 2005). Based on these theories, we surmise that research participants might belong to these types of innovators or of early adopters, but fluctuate at the downtrend of the period from the "peak of inflated expectations" to the "trough of disillusionment" of the hype cycle. These types of customers are ready for new technologies, but realize early on that the useful value of service is not as perfect as they think.

Secondly, subjective norm and visibility have been identified as factors that influence perceived usefulness, but not perceived ease of use. This result means that the usefulness of the video conference platform perceived by users becomes higher as the degree of influence from people around the user or the degree of visibility increases. The purpose of using video conference services is to find a tool that helps to communicate effectively. Therefore, if users frequently see people use a specific video conference service and realize that it is effective, they will perceive usefulness. Additionally, perceptual factors are unaffected by self-image congruence. This means that the users do not compare their own image or value with the usage of video conference services based on their perceptions. This phenomenon can be explained since video conference service currently has been recognized as a common collaboration tool in daily life, the users of the service thus tend to not bother with symbolic image.

Finally, this study looked at the effects of perceived usefulness and perceived ease of use on flow experience. The result showed that users will be immersed in using a service if they think the service is productive and uncomplicated. In addition, as prior research results (Choi, 2011; Davis, 1989; Ismail, 2016; Yun et al., 2021), this study also verified that perceived ease of use has a significant impact on perceived usefulness. This means that the easier the use of the video

conference platform, the more usefulness is realized. On the other hand, contrary to the hypothesis suggested, it was found that the influence of self-image congruence does not affect perceived usefulness and perceived ease of use at all. The primary reason for this result is due to the recent pandemic. Many people reluctantly must change work style from offline to online and it is therefore difficult to assess and compare their image with the image of the service objectively. However, when the Covid-19 situation is alleviated and people return to daily life, they can evaluate and judge whether a particular service is suitable based on their self-image and values in choosing and using the service.

## 2. Implications of Research

### 2.1. Theoretical Implications

Based on the above analysis results, this study presented several theoretical contributions. First, prior research on video conference services has primarily concentrated on case studies related to education, and most have chosen college students as primary research participants (Hwangbo & Kim, 2021; Lim & Kim, 2010; Mpungose, 2021; Sutterlin, 2018). In order to be distinct from the above studies, the subjects selected in this study were not limited to students, but extended to office workers and instructors.

Second, this study is theoretically significant since it empirically validated the integrated model by merging personality traits, social aspects, and perceptions of video conference platform users with flow experience.

### 2.2. Practical Implications

This study's practical consequences are as follows. First, in order to increase the flow experience when using video conference services, it is necessary to make an effort to form the positive technology readiness of customers. Wherever customers go in modern times, it is common to encounter new technological innovations, and they will thus have a two-sided psychological

reaction when experiencing such technologies. This separates into technophobia, the reactional concept of refusing to embrace technology, and technophilia, the reactional notion of passion for adopting new technologies (Osiceanu, 2015). Particularly, it is said that technophilia influences continuous behavioral intentions by forming positive emotions and attitudes toward the use of new technologies without fear of (Osiceanu, 2015). Due to the fact that individual technology readiness for technology acceptance may vary by gender and age group, video conference providers ought to identify a potential customer class that has difficulty accepting technology. Based on this, providers can create support services as well as experience programs at the initial acceptance stage of the customers to increase familiarity with technology.

Second, as a result of the analysis, the higher level of positive technology readiness, the easier the use of the video conference service and the more frequently they experience the flow. Therefore, in order to retain potential customers, providers need to offer customers more positive experiences by improving the aesthetic of screen layouts and the simplicity of functional tools, thereby instilling in users the perception that meetings on video conference platforms are more convenient and efficient than traditional face-to-face methods. On the other hand, the negative influence relationship between perceived usefulness and technology readiness was revealed. It is clear that perceived usefulness positively impacts flow experience. Therefore, providers must endeavor to upgrade the overall usability of the service's systems to maintain competitive advantage.

Third, customers are likely to perceive the usefulness of a video conference service based on the precedence factors of subjective norm and visibility. In fact, customers rate a given service's usefulness according to how often they see people using it and the opinions of those around them (Moore & Benbasat, 1991; Fishbein & Ajzen, 1975). Therefore, providers need to increase the customer awareness of their services on a social scale, and actively promote the company's image through marketing and advertising activities.

## 3. Limitations and Future Work

The results of this study are expected to be valuable reference materials that help video conference service providers reach new potential customers and retain existing consumers. Nevertheless, this study has the following limitations.

First, data collection and analyses were constrained as survey participants were mainly in their 20s and 30s. Given this narrow sample frame, representativeness and generalizability issues might arise. Thus, future studies in video conference services should expand the age group of research subjects.

Second, 61.4% of the survey participants use the Zoom Meetings service. Since Zoom currently has the largest share of the global market (Datanyze, 2022), this work presented a representative meaning by thoroughly judging from the standpoints of Zoom users. However, in order to construct a comprehensive analysis of the future development and competition in the video conference market, it will be necessary to compare and analyze the perspectives of other consumers that utilize the services of Zoom Meeting's competitors.

Third, data collection was done through an experimental research questionnaire in order to remove various biases and boost the validity of this study. However, with the purpose of improving the completeness of future research, it is necessary to conduct in-depth research in parallel with qualitative research through interviews and observations on the actual behaviors of respondents. Based on this, future research will be able to provide more specific academic and practical implications.

Fourth, according to research by Bollen (1989, p. 227), the GFI and AGFI may be affected by the sample size. The results of these two indexes in this study showed a slightly lower value than 0.9 which can be explained by the small sample size of this study. Therefore, in future studies, it is necessary to expand the sample size to ensure a reasonable index in evaluating model fit.

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# Does CSR Affect the Impact of Real Earnings Management on the Cost of Debt?

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## ABSTRACT

**Purpose –** We explore how corporate social responsibility (CSR) plays a role in the debt market when companies engage in real earnings management. Specifically, we analyze the cost of capital of a company with real earnings management as measured by abnormally operating cash flows, abnormally production costs and discretionary expenditures, and examine the role of CSR in the relationship.

**Design/Methodology/Approach –** The analysis sample is for Chinese publicly listed companies, the data were obtained from China Stock Market and Accounting Research (CSMAR), and the CSR data were collected from the Hexun database. We implemented OLS regression analysis by setting the proxies of real earnings management as dependent variable, cost of debt capital as a dependent variable, and CSR as a moderating variable.

**Findings –** Our empirical results show that real earnings management significantly increases the cost of debt after controlling for discretionary accruals, another proxy variable for earnings management. Especially, we find that corporate social responsibility weakens the negative impact of real earnings management on the cost of debt.

**Research Implications –** This study provides evidence that corporate social responsibility plays a significant role in mitigating the adverse impact of real earnings management on the debt market. Therefore, creditors in the debt market need to be more cautious in assessing the impact of real earnings management that may be underestimated due to high CSR performance.

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# I. Introduction

Corporate social responsibility (CSR) has been an influential factor for investors, creditors, and other stakeholders in making their investment decisions and risk management strategies (Bae et al., 2021). The various CSR activities have been becoming a strategic execution for companies that respond to the needs of various stakeholders. Many studies provided evidence of positive aspects of CSR activities in terms of sustainable management, leading to a firm operating efficiency, corporate reputation, transparency, etc. (Dhaliwal et al., 2011; Michelon, 2011; Servaes & Tamayo, 2013). Despite prevailing positive evidence for CSR, there exist negative concerns that CSR can be used strategically to achieve earnings targets (Petrovits, 2006). In this regard, this paper aims to investigate the impact of CSR activities in the debt capital market, especially for firms engaging in earnings manipulations, which would provide additional evidence on whether CSR investment can be used strategically for firms with financial reporting incentives.

Extant studies suggest two earnings manipulations: accrual earnings management from using discretionary accruals, and real earnings management from changing the timing and scale of real business activities (Graham et al., 2005). We focus on real earnings management because earnings manipulation through real activities directly affects an organization's ability to earn profit and, in turn, influences its ability to repay debt. The relationship between the cost of debt and real earnings management is relatively less explored in the context of the Chinese market. Given the differences in regulation, market system, enforcement, etc. in China (Huang & Bai, 2020; Liu & Jo, 2021), it would be worthwhile to examine this research question in the Chinese market. We develop our first hypothesis and examine whether earnings management through real activities (REM) is associated with the cost of debt in the emerging Chinese market.

Prior research documented that firms exhibi-ting high CSR activities constrain earnings management behavior through discretionary accruals as well as real activities manipulation, indicating that CSR leads to more transparent and reliable financial information to investors (Chen & Hung, 2021; Hong & Andersen, 2011). Also, there is evidence that high CSR performance enhances firms' reputation, thus lowering debt costs (La Rosa et al., 2018). Nonetheless, it remains unexplored how CSR performance affects the cost of debt when firms are engaged in real activities manipulation. In exploring this issue, this study conveys valuable information to the stakeholders in the sense that CSR investment can be strategic risk management for firms with various motives for financial reporting.

In 2008, the Shanghai Stock Exchange and the Shenzhen Stock Exchange required Chinese companies to disclose their CSR reports (Hong et al., 2020). Since then, CSR has become an important part of information disclosure for Chinese listed companies, and it has begun to emerge in empirical research and practical applications. This research targets Chinese companies listed on the Shanghai and Shenzhen stock exchanges between 2009 and 2018. Following Zhong et al. (2019), we used the Hexun.com CSR Index score, which is based on five dimensions of research: responsibility for shareholder equity, employees, supplier, and customer rights, as well as environmental responsibility and social responsibility. Also, we measured the degree of earnings management through real activities, following Roychowdhury (2006). Our empirical results indicated that real activities earnings manipulation significantly increases the cost of debts, suggesting that REM is negatively perceived by creditors, resulting in a higher interest rate, as predicted. More importantly, we find that this relationship is significantly weakened for firms that have good CSR performance, implying that CSR performance plays a significant positive role in mitigating the negative effect of earnings management in the debt market. We interpret our evidence that creditors are likely to penalize real earnings management to a lesser degree when

firms exhibit higher CSR performance.

We implemented several additional analyses by 1) employing additional REM measurements consisting of three combinations of three proxy variables following Cohen et al, (2008) and the empirical results were consistent with our hypotheses 1 and 2 in all proxy variables; 2) testing whether REM influences the long-term COD at two or three years later and finding that the negative relation between REM and COD exists until the three years after executing REM. These results strongly support our hypotheses.

Our research contributes to the current literature on CSR, real earnings management, and the cost of debt for the following reasons. First, this study adds to existing CSR literature by providing the first evidence that CSR plays a significant role in mitigating the negative impact of real activities manipulation in terms of cost of debt. This presents additional evidence on the positive role of CSR in the debt capital market, especially for the firms exhibiting earnings manipulation. From creditors' perspective, it implies that creditors more value the benefit of CSR activities than the negative effect of REM. Second, our results propose a possibility that companies enhance CSR investments strategically for risk management purposes when firms are engaged in real activities manipulation. In this regard, the stakeholders should be cautious when assessing the effects of real earnings manipulation when firms show high CSR performance. Lastly, this paper provides additional positive evidence on CSR practices in the Chinese debt market. Given Chinese capital market differs in terms of market supervision or investor evaluation due to the differences in regulations, laws, or enforcement with regards to CSR execution, it would be worthwhile to investigate the impact of CSR activities in the Chinese capital market.

This paper reviews the literature and develops hypotheses in Section 2. Variables and the research design are described in Section 3. Empirical findings are presented in Section 4, additional analyses are discussed in Section 5, and concluded in Section 6.

# II. Literature Review and Hypothesis Development

## 1. Corporate Social Responsibility

Sheldon pioneered the concept of corporate social responsibility in the business environment in 1924 (Sheldon, 2003). CSR can be decomposed into five dimensions: the environment; the social dimension; economics; stakeholders; and voluntariness (Dahlsrud, 2008), which is a set of management practices that ensures the company maximizes the positive impacts on society from its operations (Jamali & Mirshak, 2007). To understand the impact of CSR on the business environment, a number of studies have been conducted. First of all, CSR activities enhance the value of firms through improving financial performance, operating efficiency, and operating performance (Friede et al., 2015; Ortas et al., 2015; Yoon et al., 2018). Secondly, CSR engagement enhances firms' information environments, thereby lowering the cost of equity capital, as well as reducing analyst forecast errors, attracting more institutional investors (Dhaliwal et al., 2011; Du et al., 2017; Dyck et al., 2019; Jahmane & Gaies, 2020). Third, CSR helps elevate a company's brand value, thus cultivating loyalty and enhancing corporate reputation (Cha et al., 2015; Cowan & Guzman, 2020; Michelon, 2011; Wang et al., 2015).

On the other hand, prior literature analyzed CSR engagement from two perspectives: mandatory and voluntary. Economic, legal, and moral responsibilities are regarded as responsibilities that enterprises must bear, whereas responsibilities such as charity are regarded as responsibilities that enterprises voluntarily choose to bear (Jamali & Mirshak, 2007). Mandatory CSR disclosure in China has affected a firm's behavior and generated positive externalities at the expense of shareholders (Chen et al., 2018). Wang et al. (2014) examined corporate charitable donation management policies, regarded as voluntary corporate social responsibility efforts, and showed that both shareholder and government pressure have significant influences on these decisions in

China. In this context, we posit that the mandatory disclosure of CSR in China is worthwhile to examine, especially in terms of real activities manipulation and the cost of debt.

## 2. The Impact of Real Earnings Management on the Cost of Debt

The research on earnings management has focused on two perspectives: earnings manipulation through real activities (REM) and through discretionary accruals. Company managers trade off the two earnings management methods based on their relative cost and are more likely to adjust the level of accrual-based earnings management according to the level of real earnings management (Cohen et al., 2008; Zang, 2012). Following Roychowdhury (2006), real activities earnings manipulation can be implemented through sales manipulation, overproduction, and cutting discretionary expenses, thus leading to a reduction in abnormal cash flow and abnormal discretionary expense, and an increase in abnormal production cost (Cohen et al., 2008).

Studies in the literature document how REM is significantly related to the cost of debt capital (Kim & Sohn, 2013), but the authors draw mixed conclusions on the relationship between REM and COD. According to Kim et al. (2020a) based on data collected from 18 countries, the extent of REM is negatively correlated with the cost of debt. However, Ge and Kim (2010) shows that sales manipulation and higher levels of abnormal discretionary expense reductions are associated with lower borrowing costs, suggesting that bondholders cannot see through REM.

In this regard, we posit that REM is associated with COD for the following reasons. First, greater information asymmetry is the primary reason why earnings management increases borrowing costs (Shen & Huang, 2013). Investors are not able to fully verify interest and principal repayment ability for the firm's executing earnings management. The increased time and effort required to acquire necessary information will eventually be reflected in the debt yield. Moreover, supervision and

execution costs will be added to the higher debt costs (An et al., 2016; Shen & Huang, 2013). Beatty et al. (2002) showed that the borrowing firms will inevitably have to pay higher costs to cover the severe information asymmetry. Hence, when financial institutions, such as banks, recognize that firms engage in earnings manipulation, which produces higher information asymmetry, they are likely to demand higher interest rates.

Secondly, REM weakens companies' competitiveness in the long run, because when firms alter the timing and/or structure of their business activities to manipulate earnings, firms are likely to deviate from their normal business practices, which could negatively affect future performance (Roychowdhury, 2006). Credit rating agencies and bondholders view REM as a factor that increases the credit risk (Ge & Kim, 2014). Thus, debtholders can detect and price the negative effects of REM on a firm's default risk in terms of paying off principal and interest (Kim et al., 2020a).

Lastly, compared with accrual-based earnings management, REM distorts cash flow and leads to low earnings quality through real-operation-manipulating activities (Kim & Sohn, 2013). Prior literature shows that REM can have a significant and negative impact on future cash flows (Chen et al., 2010; Graham et al., 2005). In this regard, REM negatively affects a firm's earnings quality, resulting in more stringent loan terms and demanding higher mortgages (Ge & Kim, 2014), eventually leading to a higher cost of debt (Moore & Xu, 2018). Hence, we develop our first hypothesis as follows:

**H1:** Real activities earnings manipulation is positively related to the cost of debt.

## 3. The Role of CSR in the Relationship between Real Earnings Management and Cost of Debt

We predict that CSR can affect the association between REM and COD for the following reasons. First, CSR engagement may mitigate information

asymmetry (Cui et al., 2018). We posit that CSR activities is likely to alleviate the information asymmetry caused by REM engagement, thus weakening the relation between REM and COD. The disclosure on CSR performance may be considered a non-financial performance indicator that gives more information to investors, helping them to make investment decisions, which reduces information asymmetry between a firm and investors. Also, a recent study by Bae et al. (2021) documented that companies with good CSR performance are less likely to suffer future stock price crash risk that can be induced by severe information asymmetry. Cui et al. (2018) argued that since information transparency regarding CSR activities represents a subset of the overall information environment, it is possible to predict that enhanced CSR disclosures can reduce information asymmetry. In this context, we posit that, as a result of an improved information environment, firms with good CSR performance are likely to lessen the impact of REM on the increase in COD.

Second, we posit that CSR is likely to alleviate the REM's negative impact on future performance, given that CSR engagement is more related to long-term strategy. CSR can improve a firm's reputation and make them more creditworthy and reduce its default risk, resulting in a more attractive business environment and a higher level of crisis resilience (Boubaker et al., 2020), which will bring more long-term economic benefits (Kim et al., 2020b; Yang & Han, 2020). All of these are long-term orientations rather than short-term orientations. As discussed in the earlier section, REM is also associated with more long-term business risk by affecting future cash flows. In this regard, we contend that CSR engagement can be a plausible strategic plan to reduce the cost of debt when firms are more engaged in real activities manipulation. Taken together, we developed the following hypothesis.

**H2:** The relationship between REM and COD is less pronounced for firms with high CSR performance.

# III. Variables and Research Design

## 1. Data and Sample

We obtain financial data from China Stock Market and Accounting Research (CSMAR) for financial data for publicly listed companies in the Chinese market for the period from 2009 to 2018. The CSR score data for the same period is collected from the Hexun database, which is developed by an independent agency, Hexun, in China (Zhong et al., 2019). We eliminate missing or incomplete data, as well as firms in the banking industry, and winsorize the top and bottom 1% of the independent and dependent variables to resolve the effect of outliers. This produces a final sample of 15,800 firm-years for 2,959 companies.

### 1.1. Measurement of CSR

The Hexun CSR score has been widely used and verified by extant CSR-related research in China (Xiong et al., 2016; Xu et al., 2019; Zhang, 2021). The CSR rating data in the Hexun database are compiled based on firms' CSR reports and published annually on their official websites. We estimated the CSR variable as an indicator variable that equals one if CSR scores are greater than the mean, and zero otherwise.

### 1.2. Measurement of REM

Following Roychowdhury (2006) and Cohen et al. (2008), we measured REM using three methods for manipulating actual operational activities to boost reported earnings. The first method is to offer excessive sales discounts or lenient credit terms to temporarily boost sales revenues in the current period, generating abnormally low operating cash flows (RM_CFO). The second method is overproduction to report a lower cost of goods sold in the current period, producing abnormally high production costs (RM_PROD). The third method is to reduce discretionary expenditures in the current period, leading to abnormally low discretionary expenditures (RM_DISX) (Cohen et al., 2008;

Roychowdhury, 2006).

We decomposed the actual cash flow from operations (CFO) into normal and abnormal portions by estimating equation (1) for each industry and year (normal CFO is assumed to be a linear function of sales and changes in sales):

$$\frac{CFO_{j,t}}{A_{j,t-1}} = a_1 \frac{1}{A_{j,t-1}} + a_2 \frac{Sales_{j,t}}{A_{j,t-1}} + a_3 \frac{\Delta Sales_{j,t}}{A_{j,t-1}} + \varepsilon_{j,t} \tag{1}$$

where A represents total assets Sales is net sales, and $\Delta$Sales represents the change in net sales. Similarly, to estimate abnormal production cost and discretionary expenditure, we estimated equations (2) and (3), respectively, for each industry and year:

$$\frac{Prod_{j,t}}{A_{j,t-1}} = a_1 \frac{1}{A_{j,t-1}} + a_2 \frac{Sales_{j,t}}{A_{j,t-1}} + a_3 \frac{\Delta Sales_{j,t}}{A_{j,t-1}} + a_3 \frac{\Delta Sales_{j,t-1}}{A_{j,t-1}} + \varepsilon_{j,t} \tag{2}$$

$$\frac{DiscE_{j,t}}{A_{j,t-1}} = a_1 \frac{1}{A_{j,t-1}} + a_2 \frac{Sales_{j,t-1}}{A_{j,t-1}} + \varepsilon_{j,t} \tag{3}$$

where for each firm j and year t, Prod refers to production costs (the sum of the cost of goods sold and the change in inventory); and DiscE denotes discretionary expenses computed as the sum of advertising expenses, R&D expenses, and selling and administrative expenses. Thus, abnormal CFO (RM_CFO), abnormal production cost (RM_PROD) and abnormal discretionary expense (RM_DISX) capture the level of REM. Especially, RM_CFO and RM_DISX were multiplied by -1, thus representing that in all three measurements, a higher value indicates higher REM (Cohen & Zarowin, 2010; Zang, 2012).

### 1.3. Measurement of COD

We employed the interest rate as a proxy for the cost of debt in line with prior studies including La Rosa et al. (2018) and Shailer and Wang (2015), which is measured as interest expenses deflated by average long-term and short-term debt.

### 1.4. Control Variables

We control for several factors identified in prior studies (Ge & Liu, 2015; Shailer & Wang, 2015). Given that accrual-based earnings management is another type of earnings management and is correlated with COD (Cohen et al., 2008), we add discretionary accruals as a control variable to our models, which is estimated using the Dechow et al. (1995) method. In addition, we add other control variables, based on the existing literature including firm leverage (LEV), performance (ROA), firm size (SIZE), and market value of equity (MKT) (Choi et al., 2018; Ge & Kim, 2014; Jiang, 2008).

### 2. Research Design

To test the effect of REM on COD for H1, we develop equation (4):

$$COD_{i,t} = \beta_0 + \beta_1 REM_{i,t-1} + \beta_2 DA_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 SIZE_{i,t-1} + \beta_5 ROA_{i,t-1} + \beta_6 MKT_{i,t-1} + \beta_7 SOE_{i,t-1} + \Sigma Year + \Sigma Industry + \varepsilon_{i,t-1} \tag{4}$$

where our main variable of interest, REM, represents the three variables: RM_CFO, RM_DISX, and RM_PROD. Especially, Equation (4) reveals the time lag between the dependent and independent variables since we focus on how current manipulating activities affect future COD

to address the endogeneity issue. Thus, to support H1, $\beta 1$ is expected to be significant and positive.

To test the moderating role of CSR performance on the relationship between REM and COD in H2, we develop equation (5):

$$COD_{i,t} = \beta_0 + \beta_1 REM_{i,t-1} + \beta_2 CSR_{i,t-1} + \beta_3 REM_{i,t-1} \times CSR_{i,t-1} + \beta_4 DA_{i,t-1} + \beta_5 LEV_{i,t-1} + \beta_6 SIZE_{i,t-1} + \beta_7 ROA_{i,t-1} + \beta_8 SOE_{i,t-1} + \Sigma Year + \Sigma Industry + \varepsilon_{i,t-1} \tag{5}$$

Where CSR interacts with REM to examine the incremental effect of CSR performance on the relation between REM and COD. To support H2, $\beta 3$ is predicted to be significant and negative.

## IV. Empirical Results

### 1. Descriptive Statistics

Table 1 provides descriptive statistics for the

regression variables (n = 15,800). The mean and median of COD are 0.019 and 0.018, respectively, with a standard deviation of 0.015. Our main explanatory variables of REM have the mean (median) values of -0.002 (-0.002) for RM_CFO, -0.001 (0.008) for RM_DISX, and -0.001 (0.003) for RM_PROD, and their standard deviations are fairly large relative to their respective averages, suggesting they are reasonably distributed, with wide variations across sample firms.

**Table 1.** Summary of Descriptive Statistics

| Variable | N | STD | Min | Q1 | Mean | Median | Q3 | Max |
|---|---|---|---|---|---|---|---|---|
| COD | 15800 | 0.015 | 0 | 0.006 | 0.019 | 0.018 | 0.030 | 0.064 |
| RM_CFO | 15800 | 0.078 | -0.241 | -0.045 | -0.002 | -0.002 | 0.038 | 0.256 |
| RM_DISX | 15800 | 0.063 | -0.264 | -0.020 | -0.001 | 0.008 | 0.032 | 0.139 |
| RM_PROD | 15800 | 0.115 | -0.405 | -0.052 | -0.001 | 0.003 | 0.054 | 0.394 |
| DA | 15800 | 0.067 | 0.000 | 0.020 | 0.066 | 0.044 | 0.085 | 0.345 |
| CSR | 15800 | 0.500 | 0.000 | 0.000 | 0.515 | 1.000 | 1.000 | 1.000 |
| LEV | 15800 | 0.211 | 0.059 | 0.287 | 0.453 | 0.451 | 0.611 | 0.936 |
| SIZE | 15800 | 1.313 | 19.779 | 21.441 | 22.365 | 22.199 | 23.133 | 26.256 |
| ROA | 15800 | 0.062 | -0.280 | 0.012 | 0.034 | 0.033 | 0.061 | 0.193 |
| MKT | 15800 | 1.115 | 20.865 | 22.125 | 22.913 | 22.763 | 23.548 | 26.314 |
| SOE | 15800 | 0.497 | 0 | 0.000 | 0.445 | 0 | 1.000 | 1.000 |

**Table 2.** Pearson and Spearman Correlation Coefficient Matrix.

| | COD | RM_CFO | RM_DISX | RM_PROD | DA | CSR | LEV | SIZE | ROA | MKT | SOE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COD | 1 | 0.120*** | 0.152*** | 0.113*** | 0.057*** | -0.146*** | 0.349*** | 0.105*** | -0.238*** | 0.039*** | 0.031*** |
| RM_CFO | 0.120*** | 1 | 0.138*** | 0.445*** | 0.092*** | -0.123*** | 0.134*** | -0.021*** | -0.276*** | -0.060*** | 0.053*** |
| RM_DISX | 0.152*** | 0.138*** | 1 | 0.497*** | 0.015* | -0.063*** | 0.043*** | 0.030*** | -0.117*** | -0.010 | 0.032*** |
| RM_PROD | 0.113*** | 0.445*** | 0.497*** | 1 | 0.068*** | -0.134*** | 0.183*** | 0.044*** | -0.306*** | -0.009 | 0.095*** |
| DA | 0.057*** | 0.092*** | 0.015* | 0.068*** | 1 | -0.071*** | 0.135*** | -0.090*** | -0.235*** | -0.076*** | -0.037*** |
| CSR | -0.146*** | -0.123*** | -0.063*** | -0.134*** | -0.071*** | 1 | -0.033*** | 0.304*** | 0.290*** | 0.301*** | 0.055*** |
| LEV | 0.349*** | 0.134*** | 0.043*** | 0.183*** | 0.135*** | -0.033*** | 1 | 0.470*** | -0.346*** | 0.398*** | 0.267*** |
| SIZE | 0.105*** | -0.021*** | 0.030*** | 0.044*** | -0.090*** | 0.304*** | 0.470*** | 1 | 0.034*** | 0.932*** | 0.313*** |
| ROA | -0.238*** | -0.276*** | -0.117*** | -0.306*** | -0.235*** | 0.290*** | -0.346*** | 0.034*** | 1 | 0.102*** | -0.059*** |
| MKT | 0.039*** | -0.060*** | -0.010 | -0.009 | -0.076*** | 0.301*** | 0.398*** | 0.932*** | 0.102*** | 1 | 0.278*** |
| SOE | 0.031*** | 0.053*** | 0.032*** | 0.095*** | -0.037*** | 0.055*** | 0.267*** | 0.313*** | -0.059*** | 0.278*** | 1 |

Notes: 1. These data include a sample of CSMAR non-financial listed companies in China from 2009 to 2018.
2. *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively.
3. Variable Definitions: refers to Table 1.

Variable definitions:

COD = cost of debt estimated as interest expense deflated by short-term and long-term debts;

RM_CFO = abnormal cash flow proxied for REM;

RM_PROD = abnormal production cost proxied for REM;

RM_DISX = abnormal discretionary expenses proxied for REM;

CSR = 1 if CSR scores are larger than the mean and 0 otherwise;

DA = abnormal level of accruals calculated using the model from Dechow et al. (1995);

LEV = leverage ratio;

SIZE = natural logarithm of total assets;

ROA = return on assets;

MKT = market value of equity;

SOE = an indicating variable that is 1 for state-owned companies and 0 otherwise.

Table 2 presents Pearson and Spearman correlations for the independent and dependent variables. COD shows a significant positive correlation with all three REM variables, which is strongly supportive of our first hypothesis. As for CSR, it shows that CSR is negatively correlated with COD and all three REM variables, which is also consistent with our prediction. Further, COD is positively correlated with discretionary accruals, another type of earnings management, which is also consistent with prior studies. Overall, the correlation results are in line with prior studies, thus enhancing the generalization of our empirical results.

**Table 3.** The Impact of Real Earnings Manipulation on Cost of Debt (H1)

$$COD_{i,t} = \beta_0 + \beta_1 X_{i,t-1} + \beta_2 DA_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 SIZE_{i,t-1} + \beta_5 ROA_{i,t-1} + \beta_6 MKT_{i,t-1} + \beta_7 DOE_{i,t-1} + \Sigma Year + \Sigma Industry + \varepsilon_{i,t-1}$$

| Variables | X=RM_CFO | | X=RM_DISX | | X=RM_PROD | |
|---|---|---|---|---|---|---|
| | Coeff. | t Value | Coeff. | t Value | Coeff. | t Value |
| RM_CFO | 0.008 | 5.77*** | | | | |
| RM_DISX | | | 0.033 | 16.96*** | | |
| RM_PROD | | | | | 0.004 | 3.53*** |
| DA | -0.001 | -0.8 | -0.001 | -0.53 | -0.001 | -0.41 |
| LEV | 0.027 | 40.08*** | 0.027 | 32.50*** | 0.026 | 31.20*** |
| SIZE | 0.002 | 9.21*** | 0.002 | 7.60*** | 0.003 | 8.92*** |
| ROA | -0.026 | -12.79*** | -0.029 | -10.26*** | -0.031 | -10.72*** |
| MKT | -0.003 | -10.05*** | -0.003 | -7.96*** | -0.003 | -9.11*** |
| SOE | -0.004 | -14.85*** | -0.005 | -16.42*** | -0.005 | -16.04*** |
| Intercept | -0.001 | -0.8*** | 0.022 | 6.18*** | 0.023 | 6.31*** |
| YearDum | Included | | Included | | Included | |
| IndustryDum | Included | | Included | | Included | |
| Adjusted $R^2$ | 0.25 | | 0.26 | | 0.25 | |
| F Value | 174.59*** | | 187.67*** | | 173.40*** | |
| N | 15800 | | 15800 | | 15800 | |

Notes: 1. This table presents the regression results of REM on COD and other various control variables.

2. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

3. Variable definitions: refers to Table 1.

### 2. Test of H1: The Effects of Real Earnings Management on Cost of Debt

Table 3 reports the OLS regression results from examining the impact of REM on COD after controlling for other potential determinants of COD. The coefficients of RM_CFO, RM_DISX, and RM_PROD are 0.008, 0.033, and 0.004, respectively, and all three coefficients are positive and significant. This suggests that REM significantly increases the cost of debt, which is supportive of H1. As for other control variables, the coefficient of DA, a proxy for accrual-based earnings management, is insignificant in all three cases, which is, in part, consistent with Prevost et al. (2008) documenting that the cost of debt for investment-grade bonds is not related to higher discretionary accruals. The coefficients of LEV and SIZE are significant and positive, and those of ROA and SOE are significant and negative, which is in line with our prediction. The adjusted R-squares are 0.25, 0.26, and 0.25.

### 3. The Effect of Real Earnings Management on Cost of Debt for Firms with Strong CSR (H2)

Table 4 presents the effect of REM on COD, conditional on the degree of CSR performance. As predicted in H2, the regression results show that the coefficients of our variables of interest (RM_CFO×CSR, RM_DISX×CSR, and RM_PROD×CSR) are -0.006, -0.009, and -0.004, respectively, which are all negative at 5% significance level. According to our results, the impact of REM on the cost of debt will diminish for firms with strong CSR, suggesting that good CSR performance reduces the impact of REM on COD increases. This implies that creditors are less likely to penalize REM for firms with more CSR engagement, which adds another evidence of positive aspects of CSR to the literature.

## V. Additional Analyses

According to prior studies, firms that intend to boost reported earnings via REM can select two or all three methods of the three REM methods strategically (Cohen et al., 2008). Hence, we constructed three new combinations of REM measurements, denoted as RM1, RM2, and RM3 as below:

$$RM1 = RM\_CFO + RM\_DISK \qquad (6)$$
$$RM2 = RM\_DISK + RM\_PROD \qquad (7)$$
$$RM3 = RM\_CFO + RM\_DISX + RM\_PROD \qquad (8)$$

Panel A and Panel B of Table 5 provide regression results using the reconstructed REM measures as independent variables in both equation (4) for H1 and equation (5) for H2, respectively. Panel A shows that the coefficients of the three reconstructed REM measures, RM1, RM2, and RM3, are 0.016, 0.007, and 0.006, which are all positive and significant at the 1% level, thus supportive of H1. Also, panel B presents that the coefficients of interaction terms are -0.003, -0.004, and -0.002, which are qualitatively similar to our main results of H2 in Table 4. Thus, we conclude that these results strongly support our hypotheses of H1 and H2, showing the positive aspects of CSR in the Chinese debt markets.

Second, to test the relation between REM and more long-term COD, we performed regression analysis using future COD after two years and three years after REM execution in equation (4) for H1. Panel A of Table 6 presents that, the number of observations falls from 15,800 to 10,171 for $COD_{i,t+1}$ as the dependent variable. Regression analysis shows that all three REM measures remain positive and significant at the conventional level, indicating that real earnings management activities can boost COD for the next period (t+1) as well as the subsequent period (t+2). The same results appear in Panel B when using $COD_{i,t+2}$ as a dependent variable in equation (4), which is strongly supportive of H1.

**Table 4.** Regression Results of REM on COD, Conditional on CSR (H2)

$$COD_{i,t} = \beta_0 + \beta_1 X_{i,t-1} + \beta_2 CSR_{i,t-1} + \beta_3 X_{i,t-1} \times CSR_{i,t-1} + \beta_4 DA_{i,t-1} + \beta_5 LEV_{i,t-1} + \beta_6 SIZE_{i,t-1}$$
$$+ \beta_7 ROAi_{,t-1} + \beta_8 SOE_{i,t-1} + \Sigma Year + \Sigma Industry + \varepsilon_{i,t-1}$$

| Variables | X=RM_CFO | | X=RM_DISX | | X=RM_PROD | |
|---|---|---|---|---|---|---|
| | Coeff. | t Value | Coeff. | t Value | Coeff. | t Value |
| RM_CFO | 0.004 | 1.99** | | | | |
| RM_DISX | | | 0.035 | 13.76*** | | |
| RM_PROD | | | | | 0.004 | 2.80*** |
| CSR | -0.002 | -8.69*** | -0.002 | -8.11*** | -0.002 | -8.72*** |
| RM_CFO×CSR | -0.006 | -2.09** | | | | |
| RM_DISX×CSR | | | -0.009 | -2.74*** | | |
| RM_PROD×CSR | | | | | -0.004 | -2.03** |
| DA | -0.001 | -0.67 | -0.001 | -0.41 | -0.001 | -0.44 |
| LEV | 0.026 | 39.28*** | 0.027 | 40.33*** | 0.026 | 39.34*** |
| SIZE | 0.003 | 9.43*** | 0.002 | 8.22*** | 0.003 | 9.73*** |
| ROA | -0.021 | -9.99*** | -0.021 | -10.01*** | -0.023 | -10.67*** |
| MKT | -0.003 | -9.33*** | -0.003 | -8.45*** | -0.003 | -9.73*** |
| SOE | -0.004 | -14.84*** | -0.003 | -14.9*** | -0.003 | -14.6*** |
| Intercept | 0.017 | 5.89*** | -0.002 | -8.11*** | 0.018 | 6.22*** |
| YearDum | Included | | Included | | Included | |
| IndustryDum | Included | | Included | | Included | |
| Adjusted $R^2$ | 0.25 | | 0.27 | | 0.25 | |
| F Value | 166.96*** | | 179.02*** | | 165.88*** | |
| N | 15800 | | 15800 | | 15800 | |

Notes: 1. This table presents the regression results of real earnings manipulation on cost of debt, conditional on CSR performance. RM_CFO×CSR, RM_DISX×CSR, and RM_PROD×CSR are the variables of our interest.

2. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

3. Variable definitions: refers to Table 1.

**Table 5.** Tests of H1 and H2 Using the Reconstructing REM Measures

Panel A: Test of H1

$$COD_{i,t} = \beta_0 + \beta_1 X_{i,t-1} + \beta_2 DA_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 SIZE_{i,t-1} + \beta_5 ROD_{i,t-1} + \beta_6 MKT_{i,t-1} + \beta_7 SOD_{i,t-1} + \Sigma Year + \Sigma Industry + \varepsilon_{i,t-1}$$

| Variables | X=RM1 | | X=RM2 | | X=RM3 | |
|---|---|---|---|---|---|---|
| | Coeff. | t Value | Coeff. | t Value | Coeff. | t Value |
| RM1 | 0.016 | 15.22*** | | | | |
| RM2 | | | 0.007 | 9.36*** | | |
| RM3 | | | | | 0.006 | 9.75*** |
| DA | -0.002 | -0.96 | -0.001 | -0.63 | -0.001 | 0.75*** |
| LEV | 0.027 | 40.34*** | 0.027 | 40.15*** | 0.027 | 40.00*** |
| SIZE | 0.002 | 8.14*** | 0.002 | 8.50*** | 0.002 | 8.50*** |
| ROA | -0.022 | -10.95*** | -0.025 | -12.03*** | -0.024 | -11.49*** |
| MKT | -0.003 | -8.93*** | -0.003 | -9.45*** | -0.003 | -9.36*** |
| SOE | -0.004 | -15.32*** | -0.004 | -15.15*** | -0.004 | -15.22*** |
| Intercept | 0.020 | 7.11*** | 0.022 | 7.66*** | | |
| YearDum | Included | | Included | | Included | |
| IndustryDum | Included | | Included | | Included | |
| Adjusted $R^2$ | 0.26 | | 0.25 | | 0.25 | |
| F Value | 183.38*** | | 177.00*** | | 177.33*** | |
| N | 15800 | | 15800 | | 15800 | |

Notes: 1. This panel reports the OLS regression results of REM on COD and other various control variables.
2. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.
3. REM measures are reconstructed as follows: RM1 = RM_CFO + RM_DISX; RM2 = RM_DISX + RM_PROD; RM3 = RM_CFO + RM_DISX +RM_PROD; Other variables definition: refers to table 1.

Panel B: Test of H2

$$COD_{i,t} = \beta_0 + \beta_1 X_{i,t-1} + \beta_2 DA_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 SIZE_{i,t-1} + \beta_5 ROA_{i,t-1} + \beta_6 MKT_{i,t-1} + \beta_7 SOD_{i,t-1}$$
$$+ \Sigma Year + \Sigma Industry + \varepsilon_{i,t-1}$$

| Variables | X=RM1 | | X=RM2 | | X=RM3 | |
|---|---|---|---|---|---|---|
| | Coeff. | t Value | Coeff. | t Value | Coeff. | t Value |
| RM1 | 0.017 | 11.03*** | | | | |
| RM2 | | | 0.008 | 7.82*** | | |
| RM3 | | | | | 0.006 | 7.78*** |
| CSR_dum | -0.002 | -8.04*** | -0.002 | -8.26*** | -0.002 | -8.22*** |
| RM1× CSR | -0.003 | -1.26 | | | | |
| RM2× CSR | | | -0.004 | -2.55** | | |
| RM3× CSR | | | | | -0.002 | -2.08** |
| DA | -0.001 | -0.73 | -0.001 | -0.46 | -0.001 | -0.54 |
| LEV | 0.026 | 39.50*** | 0.026 | 39.30*** | 0.026 | 39.17*** |
| SIZE | 0.002 | 8.57*** | 0.002 | 8.99*** | 0.002 | 8.99*** |
| ROA | -0.018 | -8.53*** | -0.020 | -9.56*** | -0.019 | -9.09*** |
| MKT | -0.003 | 8.49*** | -0.003 | -9.05*** | -0.003 | -8.98*** |
| SOE | -0.004 | 15.20*** | -0.004 | -14.97*** | -0.004 | -15.05*** |
| Intercept | 0.016 | 5.58*** | 0.018 | 6.07*** | 0.017 | 5.89*** |
| YearDum | Included | | Included | | Included | |
| IndustryDum | Included | | Included | | Included | |
| Adjusted $R^2$ | 0.26 | | 0.25 | | 0.25 | |
| F Value | 174.68*** | | 168.05*** | | 169.24*** | |
| N | 15800 | | 15800 | | 15800 | |

Notes: 1. This panel reports the OLS regression results of REM on COD, conditional on CSR performance. RM1×CSR, RM2×CSR, and RM3×CSR are the variables of interest.
2. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.
3. Variable definitions: refers to Table 1.

**Table 6.** The Impact of REM on long-term Cost of Debt

Panel A: Regression results of real earnings management on cost of debt at t+1

$$COD_{i,t+1} = \beta_0 + \beta_1 X_{i,t-1} + \beta_2 DA_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 SIZE_{i,t-1} + \beta_5 ROA_{i,t-1} + \beta_6 MKT_{i,t-1}$$
$$+ \beta_7 SOD_{i,t-1} + \Sigma Year + \Sigma Industry + \varepsilon_{i,t-1}$$

| Variables | X=RM_CFO | | X=RM_DISX | | X=RM_PROD | |
|---|---|---|---|---|---|---|
| | Coeff. | t Value | Coeff. | t Value | Coeff. | t Value |
| RM_CFO | 0.011 | 6.60*** | | | | |
| RM_DISX | | | 0.033 | 16.96*** | | |
| RM_PROD | | | | | 0.004 | 3.53*** |
| DA | -0.001 | -0.71 | -0.001 | -0.53 | -0.001 | -0.41 |
| LEV | 0.026 | 31.12*** | 0.027 | 32.50*** | 0.026 | 31.20*** |
| SIZE | 0.003 | 8.95*** | 0.002 | 7.60*** | 0.003 | 8.92*** |
| ROA | -0.030 | -10.27*** | -0.029 | -10.26*** | -0.031 | -10.72 |
| MKT | -0.003 | -9.04*** | -0.003 | -7.96*** | -0.003 | -9.11 |
| SOE | -0.005 | -16.04*** | -0.005 | -16.42*** | -0.005 | -16.04 |
| Intercept | 0.022 | 6.04*** | 0.022 | 6.18*** | 0.023 | 6.31*** |
| YearDum | Included | | Included | | Included | |
| IndustryDum | Included | | Included | | Included | |
| Adjusted $R^2$ | 0.27 | | 0.28 | | 0.26 | |
| F Value | 136.89*** | | 149.18*** | | 135.33*** | |
| N | 10171 | | 10171 | | 10171 | |

Notes: 1. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.
        2. Variable definitions: refers to Table 1.

Panel B: Regression results of real earnings management on cost of debt at t+2

$$COD_{i,t+2} = \beta_0 + \beta_1 X_{i,t-1} + \beta_2 DA_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 SIZE_{i,t-1} + \beta_5 ROA_{i,t-1} + \beta_6 MKT_{i,t-1}$$
$$+ \beta_7 SOD_{i,t-1} + \Sigma Year + \Sigma Industry + \varepsilon_{i,t-1}$$

| Variables | X=RM_CFO | | X=RM_DISX | | X=RM_PROD | |
|---|---|---|---|---|---|---|
| | Coeff. | t Value | Coeff. | t Value | Coeff. | t Value |
| RM_CFO | 0.011 | 5.44*** | | | | |
| RM_DISX | | | 0.033 | 14.20*** | | |
| RM_PROD | | | | | 0.003 | 2.53** |
| DA | -0.001 | -0.62*** | -0.002 | -0.64*** | -0.001 | -0.56*** |
| LEV | 0.023 | 22.02*** | 0.024 | 23.34*** | 0.023 | 22.11*** |
| SIZE | 0.003 | 8.09*** | 0.003 | 6.94*** | 0.003 | 8.06*** |
| ROA | -0.028 | -7.95*** | -0.027 | -7.83*** | -0.030 | -8.44*** |
| MKT | -0.003 | -7.22*** | -0.003 | -6.35*** | -0.003 | -7.27*** |
| SOE | -0.005 | -13.87*** | -0.005 | -14.17*** | -0.005 | -13.81*** |
| Intercept | 0.016 | 3.47*** | 0.016 | 3.66*** | 0.016 | 3.66*** |
| YearDum | Included | | Included | | Included | |
| IndustryDum | Included | | Included | | Included | |
| Adjusted $R^2$ | 0.25*** | | 0.27*** | | 0.25*** | |
| F Value | 89.63*** | | 98.43*** | | 88.44*** | |
| N | 6959 | | 6959 | | 6959 | |

Notes: 1. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.
2. Variable definitions: refers to Table 1.

Lastly, we tested the moderating role of state-owned enterprises, instead of CSR, on the relationship between REM and COD. Unlike other economic systems, the Chinese government plays a more active role in the economy. SOEs are encouraged by the central government to promote CSR (Zhu et al., 2016). Lim et al. (2018) documents that China's state-owned enterprises generally perform better in social responsibility indicators, compared to non-SOEs. According to Hofman et al. (2017), Chinese SOEs participate in state-led CSR that represents local and global societal expectations, whereas private companies engage in society-driven CSR that reflects concerns for local reputation. Hence, as a robustness check, we use SOEs as a proxy of state-led CSR to address the same research question. Table 7 provides the empirical results using the SOE indicator variable

to interact with the three measurements of REM. The results show that state-owned enterprises are punished less, in terms of COD, when they perform REM, as indicated by significant and negative coefficients of RM_CFO×SOE and RM_PROD×SOE, which is consistent with our prediction. However, the coefficient of RM_DISX×SOE is rather positive and significant, unlike our prediction. These results require further study to verify the role of SOEs in terms of COD and REM in China.

**Table 7.** Regression Results of REM on COD, Conditional on SOEs

$$COD_{i,t} = \beta_0 + \beta_1 X_{i,t-1} + \beta_2 SOE_{i,t-1} + \beta_3 X_{i,t-1} \times SOE_{i,t-1} + \beta_4 DA_{i,t-1} + \beta_5 LEV_{i,t-1} + \beta_6 SIZE_{i,t-1} + \beta_7 ROA_{i,t-1} + \Sigma Year + \Sigma Industry + \varepsilon_{i,t-1}$$

| Variables | X=RM_CFO | | X=RM_DISX | | X=RM_PROD | |
|---|---|---|---|---|---|---|
| | Coeff. | t Value | Coeff. | t Value | Coeff. | t Value |
| RM_CFO | 0.013 | 7.23*** | | | | |
| RM_DISX | | | 0.026 | 12.72*** | | |
| RM_PROD | | | | | 0.004 | 3.23*** |
| SOE | -0.004 | -14.86*** | -0.004 | -15.07*** | -0.003 | -14.67*** |
| RM_CFO×SOE | -0.012 | -4.36*** | | | | |
| RM_DISX×SOE | | | 0.014 | 3.94*** | | |
| RM_PROD×SOE | | | | | -0.004 | -2.03** |
| DA | -0.002 | -0.97 | -0.001 | -0.60 | -0.001 | -0.59 |
| LEV | 0.027 | 40.23*** | 0.027 | 41.22*** | 0.027 | 40.19*** |
| SIZE | 0.002 | 9.04*** | 0.002 | 8.00*** | 0.002 | 9.15*** |
| ROA | -0.026 | -12.61*** | -0.025 | -12.67*** | -0.027 | -13.17*** |
| MKT | -0.003 | -9.94*** | -0.003 | -9.13*** | -0.003 | -10.10*** |
| Intercept | 0.022 | 7.68*** | 0.023 | 7.92*** | 0.023 | 7.85*** |
| YearDum | Included | | Included | | Included | |
| IndustryDum | Included | | Included | | Included | |
| Adjusted R$^2$ | 0.25 | | 0.26 | | 0.25 | |
| F Value | 169.77*** | | 182.28*** | | 167.97*** | |
| N | 15800 | | 15800 | | 15800 | |

Notes: 1. This table presents the regression results of real earnings manipulation on cost of debt, conditional on CSR performance. The interaction terms of RM_CFO×SOE, RM_DISX×SOE, and RM_PROD×SOE are the variables of our interest.

2. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

3. Variable definitions: refers to Table 1.

## VI. Conclusion

In response to the growing need to become a socially responsible company, corporate social responsibility has been recognized as a key performance indicator along with financial performance. In this paper, we investigated how CSR plays a role in the debt market when firms exhibit real earnings manipulations. We found that real earnings manipulation has a significant negative impact on the cost of debt, which is consistent with previous literature, and the increase in debt costs caused by real activities manipulation is significantly lessened for firms that are highly committed to CSR engagement. These results provide practical implications for information users including investors, management, as well as policy makers.

Our research suggests the following implications to various stakeholders. First, this study provides the first evidence that CSR plays a significant positive role in the debt market for firms engaging in real earnings management. Second, creditors are likely to penalize real earnings manipulations to a lesser degree when firms are more engaged in CSR activities. This can be interpreted as evidence that creditors more highly value the benefit of CSR than the negative effect of REM execution. Lastly, creditors need to be more cautious in assessing the impact of REM on socially responsible firms with higher CSR performance in the sense that the effect of real earnings management may be underestimated. As a further study, we propose to extend the sample period and investigate the impact of COVID-19 on earnings manipulating behavior and cost of debt. Specifically, it will be interesting to investigate how the positive aspects of CSR have changed in the relation of earnings manipulation and cost of debt around the COVID-19 era. In addition to COVID-19 effect, we propose another future study using ESG - environmental, social and governance - as an important measurement of corporate social responsibility. As ESG management has received much attention as a critical non-financial indicator, it would be very meaningful to reexamine the relationship among ESG, cost of debt and earnings manipulation.

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# The Effect of CSR Attributes on Purchase Intention in Both Korea and China

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## ABSTRACT

**Purpose** – In this study, we explore the impact of corporate social responsibility (CSR) attributes on consumers' brand attitudes and purchase intention in the electronic industry. We particularly drew implications by comparing Korea and China.

**Design/Methodology/Approach** – The research model was established based on extant research. A survey was conducted that focused on consumers in the electronics industry. 212 questionnaires from Korea and 208 questionnaires from China were used for analysis. Multiple regression was utilized for analyses.

**Findings** – Results confirm the results of previous studies. Furthermore, we found that CSR attributes (i.e., CSR fit, CSR sustainability, CSR impact) are important variables influencing brand attributes and the purchase intention of consumers. Namely, consumers perceived brand attitude positively according to the level of CSR attributes they associated with brands. Brand attitude also had a positive effect on purchase intention. In addition, brand attitude showed positive mediating effects between CSR attributes and purchase intention. Companies' CSR activities are perceived as more genuine when they consistently perform these activities, have a great effect on social problem solving, and match with the corporate image.

**Research Implications** – Based on these analyses, we have presented strategies and implications for CSR activities. Theoretically, this study contributes to the CSR theory by providing evidence that consumers' detailed CSR attributes affect purchase intention through brand attitude. This study also provides strategic implications for business managers and policymakers by suggesting guidelines and strategies for CSR activities.

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## I. Introduction

Corporate social responsibility (CSR) activities not only involve corporate social contributions but also are considered strategic elements for a company's sustainable growth and are recognized as essential for corporate management activities (Kim & Lee, 2020). As the size and influence of the company increase, expectations of consumers for social responsibility increase (Im & Park, 2016). In general, CSR does not affect a product's functionality or performance-related evaluation but rather affects consumers' general perception of the company (Hoeffler & Keller, 2002; Huber, 2011). Consumers also recognize factors associated with CSR activities beyond financial performance when evaluating a company, which affect their recommendations and purchase intention as well as their attitude toward products (Brown & Dacin, 1997; Yen & Yang, 2018). Thus, CSR activities can be an important strategy for attracting consumer attention in today's competitive market environment (Luo & Bhattacharya, 2006). In other words, in order to induce a good brand attitude through CSR activities, it is important to properly target consumers who are interested in CSR activities (Kim & Lee, 2020).

Since its introduction in the 1950s, various studies have been conducted on the issue of CSR (Singh et al., 2019). Positive effects of CSR activities include improved image and attitude toward companies that perform CSR, improved stakeholder satisfaction, enhanced buffering against corporate crises, increased ability to secure potential customers or employees, and increased purchase intentions (Mulaessa & Wang, 2017; Maignan & Ferrell, 2004; Fombrum & Van Riel, 2004). However, if brands are judged to engage in CSR activities for short-term benefit, consumers are skeptical of the CSR activities and, as a result, are likely to negatively assess the company's CSR activities (Yoo & Lee, 2018). While many studies have focused on CSR, there has been little discussion dealing with various aspects of CSR.

To study the effectiveness of CSR activities, extant studies mainly dealt with factors such as 'CSR sustainability', which determines whether CSR activities are consistent (Ellen et al., 2006), and 'CSR fit' to the extent to which the company's stakeholders perceive the relationship between a company's business and CSR activities (Gupta & Pirsch, 2006).

Speed and Thompson (2000) found that the higher the CSR fit, the greater the consumers' interest and favorability toward the company, thus, encouraging consumers to use more of the company's products. Cho (2019) reported that if consumers determined that CSR activities of a company or organization had been implemented continuously, attitudes toward CSR activities could also be positive. The attributes of CSR activities are defined differently depending on the researchers. CSR activities can be divided according to their primary function. For example, Carroll (1979) separated CSR functions into economic, legal, ethical, and discretionary responsibilities. In the study of An et al. (2017), the attributes of CSR activities were redefined and divided into three categories: consistency, differentiation, and fit. In this study, the properties of CSR activities are classified into CSR fit, CSR sustainability, and CSR impact.

The customer evaluation of a company is affected by CSR attributes (Du et al., 2010; Feldman & Vasquez-Parraga, 2013). Looking at most existing research, some studies have been conducted on the impact of CSR activities on 'consumer attitude' or 'purchase intention'. However, research on the impact of specific attributes of CSR activities on consumer attitudes and behavior is somewhat lacking. Therefore, this study considers what attributes of CSR activities affect consumers' brand attitudes and purchase intentions.

More specifically, this study aims to achieve the following objectives. First, this study explores the attributes of CSR activities based on the relevant extant research, which was divided into the three main categories of CSR sustainability, CSR fit, and CSR impact. Second, we also examine the

impact of these attributes on brand attitude and purchase intention. Currently, many companies are participating in CSR activities, but in order to induce more active and continuous CSR activities, it is important to understand how these activities are linked to the marketing activities of the company to enhance the image of the company's brand or consumer purchases (Kim & Lee, 2020). Third, we consider the 'mediating effect of brand attitude' between CSR attributes and purchase intention. Fourth, this study compares the differences between Korea and China in the electronics industry. Finally, we would like to suggest strategic implications for academic scholars, business managers, and policymakers in Korea and China.

This paper has been organized as follows: In Section 2, the literature review, we deal with related extant theories and studies based on the research model. The hypotheses of this study are shown in Section 3. The penultimate section details our empirical analyses. In the final section, we present theoretical, managerial, and policy implications, as well as the contributions and limitations of this study.

## II. Literature Review

CSR is defined as a company's commitment to eliminating or minimizing any harmful effects and maximizing its sustainable and beneficial impact on society (Mohr et al., 2001). CSR has become an important issue for academia, business managers, and policymakers alike. As noted previously, a representative CSR study revealed four responsibilities for a company to become a good social citizen: economic, legal, ethical, and discretionary (Carroll, 1979, 1991). Liu and Jung (2021) define the attribute of a company's CSR activities as the nature of the CSR that the company exhibits when it carries out the CSR activities. In this study, the attributes of these CSR activities are intended to be utilized when verifying the effectiveness of CSR activities.

Nam and Nam (2020) analyzed how the CSR attributes (economic, ethical, legal, and discretionary aspects) defined by Carroll (1979) affect a company's reliability and purchasing intention. In a study by An et al. (2020), the three attributes of CSR sustainability, CSR fit, and CSR impact were selected as components of CSR attributes. In Nam (2016)'s empirical studies on CSR attributes and consumer confidence in Korean insurance companies, CSR attributes are determined by CSR fit, CSR purity, and CSR sustainability. Bae (2014) conducted an empirical analysis of two effects of CSR communication attributes: CSR commitment and CSR influence.

Based on the above studies, this study tries to distinguish attributes of CSR activities into three main categories of CSR fit, CSR sustainability, and CSR impact.

### 1. CSR Fit

Du et al. (2010) described CSR fit from the perspective of consumers as 'the perceived match between social problems and the company's businesses. Elving (2013) defined CSR fit as 'observed linkages between a CSR domain and a company's product, image, positioning among target groups. Consequently, CSR fit refers to the perceived relevance between a company's characteristics and its CSR activities (Becker-Olsen et al., 2006). CSR fit is an important strategic decision in the planning of CSR activities and is among the antecedent variables affecting CSR effectiveness. In addition, it is a notable concept in that it presents directionality in the progress of CSR activities (Do, 2005).

In CSR activities, when a company's product characteristics, consumer characteristics, and company's image are compatible with that company's CSR activities, they can create strategic effectiveness (Kim et al., 2010). Barone et al. (2000) found that CSR fit had a significant impact on consumers' purchase intentions, one of the most desirable behavioral outcomes of CSR activities (Myers, 2003). Menon and Barbara (2003) revealed

that consumers show a positive attitude toward CSR activities when CSR content is related to the corporate brands or business areas. Speed and Thompson (2000) also found that the higher the CSR fit, the greater the consumers' interest and affinity for the company, so the consumer is more willing to use the company's products.

## 2. CSR Sustainability

To study the effects of CSR activities, extant studies have mainly addressed factors such as 'CSR sustainability', which consider whether CSR activities are performed consistently (Ellen et al., 2006). CSR sustainability is the possibility that CSR activities can be maintained continuously through 'persistence' and 'consistency' (Liu & Jung, 2021).

It is related to whether the company has been continuously carrying out CSR marketing activities and whether its goals and performance tactics remain the same from beginning to end (Cho, 2013; Piao & Hwang, 2016). It also encompasses how consistent CSR activities are (L'Etang, 1994).

Consistency is a concept that relates to whether a company is consistently investing in CSR activities at the same level of time and effort, regardless of external conditions (An et al., 2020). CSR consistency is a consumer's perception that is commonly associated with the purposes and intentions of the CSR activities performed consistently and continuously by a company. It is an important factor for stakeholders to determine the attitude or behavior in which the company performs the CSR activities (Kelly, 1973).

## 3. CSR Impact

Impact means a change or benefit resulting from a particular act. CSR impact refers to 'how much of a social contribution that activities conducted by a company have actually made' (Du et al., 2011). In other words, CSR impact means the perception of how directly CSR activities have

contributed to solving social problems (Alhouti et al., 2016). Impact is related to 'the real effect' and 'the level of contribution' of CSR activities. It means whether CSR activities helped to solve a problem. It is related to the importance of social problems, the size of the campaign, the ripple effect, and whether it is appropriate for the size of the company in solving social problems (An et al., 2020).

According to Holbrook (1978), a greater CSR impact results in a greater likelihood that CSR activities are interpreted as being altruistically motivated. Consumers demand objective information or evidence that a company's CSR activities can contribute sufficiently to solving a social problem and that the company performs CSR activities due to purely altruistic motives (Du et al. 2011).

## 4. Brand Attitude

Brands help distinguish themselves from other companies' products or services within a competitive market, and branding can be used to attract consumer attention by providing information to consumers (Ghodeswar, 2008). Attitude refers to a consistent response to an object that is expressed favorably or unfavorably through learning or experience (Aaker, 1997). The attitude that customers have or gain toward a brand can play a key role in the perceived value of the brand (Alden et al. 2013).

Keller (1987) noted that brand attitudes are a comprehensive assessment of a particular brand and an important factor in understanding consumer psychology and consumer behavior related to a particular brand selection. Brand attitude is a summary of consumers' evaluation of a particular product and brand and is a concept that is the basis for consumers' intention to purchase and choose a brand (Li & Lee, 2018).

Brand attitudes play an important role because they could be used to predict consumers' intention to purchase and related behaviors (Arjun, 1999). Therefore, companies need to understand what

consumers think of the brand and further explore their attitudes toward it.

## 5. Purchase Intention

In general, purchase intention is related to purchasing a particular product by a consumer. It can be seen as a link between purchasing attitude and purchasing behavior, and it has been known as the best variable to predict actual purchasing behavior (Kim et al., 2010). Namely, purchase intention is a consumer's objective intention toward a product (Fishbein & Ajzen, 1975). Engel and Blackwell (1982) defined purchase intention as meaning an anticipated or planned future action related to purchasing behavior and urged that in most cases, there is a high correlation in which purchase intentions are converted to actual purchasing of products.

Purchase intention refers to a consumer's plan to purchase a product or participate in a service, including the specific circumstances and timing in which the consumer will purchase the product (Lu et al., 2014). Purchase intention is a consumer's tendency to perform a particular action and serves as a critical barometer for predicting consumer behavior (Aaker, 1991). In this study, purchase intention is used as a dependent variable to explain the attributes of CSR activities and purchasing behaviors towards brand attitudes.

## III. Research Hypotheses

### 1. Attributes of CSR Activities and Brand Attitude

Sustainable CSR activities can be a strategic tool to strengthen a positive corporate image in the long run (Brown & Dacin, 1997). Kim et al. (2005), who applied the concept of sustainability (or persistence) to CSR activities, assumed the concept of time spent on CSR activities as persistence of CSR activities and revealed that the sustainability of CSR activities has a positive

influence on corporate attitudes. Ellen et al. (2006) found that CSR has a positive impact on consumers only if consumers recognize that the company's CSR activities have been performed sustainably. Keller (1987) also found that when a brand delivers consistent messages, consumers remember the brand's messages for a longer time and yield a more positive evaluation.

The impact of 'CSR fit' on consumers' corporate evaluations has been revealed through various studies. Among them, Speed and Thompson (2000) showed that the higher the CSR fit, the greater the consumer's interest and acceptance of a company, which eventually leads to a greater tendency to use the products of the company. Yoon and Cho (2007) found that corporate image and CSR fit have a positive effect on brand attitude. As a result, brand attitudes will be more positive when the nature of the company and the fit among CSR activities is high (Seo & Yang, 2015). A high level of CSR fit positively influences consumers' brand attitude and the company's product because it makes the CSR activities more effective (Elving, 2013).

Meanwhile, Brian and Nowak (2000) argued that corporate activities, for the public good, serve as an important link among the many nodes of brand association networks stored in consumers' memories, having a positive impact on brand attitudes.

Hence, we propose the following hypotheses.

**H1:** Attributes of CSR activities will have a positive effect on brand attitude.
**H1a:** CSR sustainability will have a positive effect on brand attitude.
**H1b:** CSR fit will have a positive effect on brand attitude.
**H1c:** CSR impact will have a positive effect on brand attitude.

### 2. Attributes of CSR Activities and Purchase Intention

Cho and Lee (2015) argued that there are significant differences in the intention of

purchasing products (of social enterprises) depending on the attributes of CSR activities. Companies that faithfully perform CSR activities have a positive effect on behavioral variables such as the purchasing intentions of consumers. As a result, such companies have improved profitability (Martínez & del Bosque, 2013; Waddock & Graves, 1997).

Becker-Olsen et al. (2006) showed that CSR activities enhance consumers' purchasing intentions. Luo and Bhattacharya (2006) demonstrated a direct relationship between CSR activities and customers' overall evaluation of companies. Brown and Dacin (1997) stated that sustainable CSR activities have a positive impact on corporate image, which in turn leads consumers to have a favorable attitude and purchasing intention toward the company and products.

If CSR activities are better recognized, consumers' perception of companies will become more favorable and eventually have a positive effect on their willingness to purchase (Mejri & De Wolf, 2012). There is a consensus that brand image is strengthened by CSR activities if the company knows how to elicit trust, build credibility and develop a solid reputation in the views of other stakeholders (Maldonado et al., 2017). Gatti et al. (2012) reported that CSR activities, together with the perceived quality of products, can provide a competitive advantage by influencing purchase intentions. Consumers also perceive factors related to CSR activities beyond financial performance in evaluating a company, and such factors not only affect their attitude toward products but also their recommendations and purchases (Brown & Dacin, 1997; García-Conde et al., 2016; Yen & Yang, 2018).

On the other hand, CSR impact has been shown to have a significant impact on not only attitudes toward products but also on the intention of purchasing and additional payment (Bae, 2014). Hence, we propose the following hypotheses.

**H2:** Attributes of CSR activities will have a positive effect on purchase intention.

**H2a:** CSR sustainability will have a positive effect on purchase intention.
**H2b:** CSR fit will have a positive effect on purchase intention.
**H2c:** CSR impact will have a positive effect on purchase intention.

### 3. Brand Attitude and Purchase Intention

Brand attitudes have a significant impact on consumers' purchasing intentions and have been considered one of the key factors in understanding consumers' purchasing behavior (Wang & Lee, 2016). Customers' attitudes towards brands have a significant influence on their purchase intentions because brand attitude is the most important determinant of purchase intention (Abzari et al., 2014; Sari, 2019). Since Fishbein and Ajzen (1975) found a significantly positive relationship between consumers' attitudes and purchase intention, most research has supported the hypothesis that consumers' attitudes directly or indirectly affect purchase intention (Sicilia et al. 2006; Wahid & Ahmed, 2011; Wu & Lo 2009). Specifically, Lii and Lee (2012) found that the attitude toward a brand positively affects the purchase intention. Hence, we propose the following hypotheses.

**H3:** Brand attitude will have a positive effect on purchase intention.

### 4. Mediating Effect of Brand Attitude

The theory of reasoned action contends that customers' brand attitude is positively related to purchase intention. In the same vein, it can be expected that CSR activities of an organization influence customers' attitudes towards brands, which in turn induce purchase intentions (Chu & Chen, 2019). CSR plays an important role in shaping consumer attitudes. The consumers' attitudes formed by CSR activities affect their attitude toward the company, consumers' behavior, and purchasing intentions (Webb & Mohr, 1998).

Becker-Olsen et al. (2006) argued that the higher

the CSR fit, the more positive the consumer's confidence, attitude, and purchase intention of products. Conversely, lower CSR fit has a negative impact on consumer beliefs, attitudes, and purchase intentions. According to Brown and Dacin (1997), the sustainability of CSR activities has a positive impact on consumers having a favorable attitude and intention to purchase businesses and products.

Consumer attitudes indicate how companies, brands, and stores are assessed, which enables predictions of consumer behavior (Foxall & Goldsmith, 1994). The attributes of CSR activities include the following: (1) CSR sustainability is related to carrying out the same effort and subject continuously; (2) CSR fit means the association with a company's business area or capability; (3) CSR impact is related to the meaningful contribution to solving social problems; and (4) CSR activities are differentiated from competitors. These factors directly or indirectly affect consumers' perception of whether a company's CSR activities make a valuable social contribution.

Consequently, these CSR attributes have a meaningful impact on the overall CSR activity as well as on trust and attitudes toward the company, product attitudes, and purchasing intention (Alhouti et al., 2016; Becker-Olson et al., 2006). Based on these discussions, this study presents the following hypotheses:

**H4:** Brand attitude will have a positive mediating effect between CSR attributes and purchase intention.
**H4a:** Brand attitude will have a positive mediating effect between CSR sustainability and purchase intention.
**H4b:** Brand attitude will have a positive mediating effect between CSR fit and purchase intention.
**H4c:** Brand attitude will have a positive mediating effect between CSR impact and purchase intention.

The research model, which combines the above hypotheses, is shown in Fig.1.

**Fig. 1.** Conceptual Model
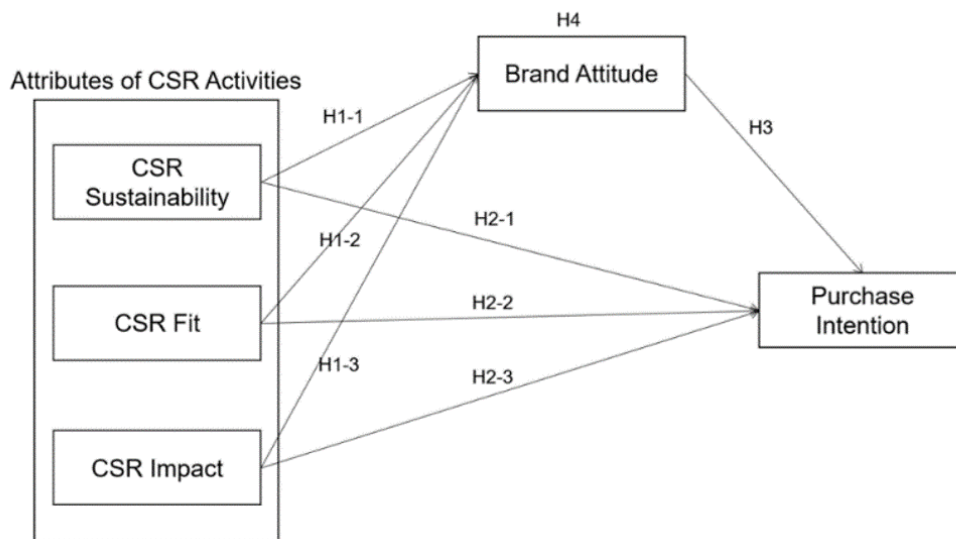
## IV. Data Analysis

In this study, we collected questionnaires from general consumers in the electronics industries of Korea and China. The questionnaire used a five-point scale (1 point, not at all; 5 points, very much). The total number of samples collected was 233 in Korea and 228 in China. Excluding incomplete submissions, 212 questionnaires from Korea and 208 questionnaires from China were used in our analyses.

The survey targets South Korea's Chungcheong Province, China's Shandong Province, and Hebei Province. The chosen areas are not the most developed areas of the electronics industry in each country. However, it was judged that the comparison between these two regions could find sufficient significance. Because two regions are actively developing the electronics industry. Multiple regression was utilized for analyses. The characteristics of the samples are shown in Table 1.

**Table 1.** Characteristics of Sample

|  | Characteristics | No. (Korea) | % (Korea) | No. (China) | % (China) |
|---|---|---|---|---|---|
| Gender | Male | 93 | 43.9 | 114 | 54.8 |
|  | Female | 119 | 56.1 | 94 | 45.2 |
| Age | 10–19 | 5 | 2.4 | 8 | 3.8 |
|  | 20–29 | 98 | 46.2 | 99 | 47.6 |
|  | 30–39 | 81 | 38.2 | 56 | 26.9 |
|  | 40–49 | 23 | 10.8 | 28 | 12.5 |
|  | ≥50 | 5 | 2.4 | 19 | 9.1 |

To assess the measurement qualities and discriminant validity of the model variables, confirmatory factor analysis was conducted. The factor loadings of each item were higher than 0.6. The results are shown in Table 2.

**Table 2.** Variables and Item Description

| Variables | Items | Korea | | China | |
| --- | --- | --- | --- | --- | --- |
| | | Mean (SD) | Factor Loading | Mean (SD) | Factor Loading |
| CSR Sustainability | The company has been conducting CSR activities for a long time. | | 0.814 | | 0.833 |
| | The company continues to carry out CSR activities. | 3.97 (0.691) | 0.785 | 3.67 (0.636) | 0.786 |
| | The entity is consistently performing CSR activities. | | 0.795 | | 0.694 |
| | The company's CSR activities are systematic and are being carried out in accordance with the company's goals. | | 0.737 | | / |
| CSR Fit | The company's CSR activities are related to the characteristics of the company. | | 0.713 | | 0.785 |
| | The company's CSR activities are highly similar to the company's industry characteristics. | 4.01 (0.605) | | 3.70 (0.659) | 0.638 |
| | The company's CSR activities are highly related to its corporate image. | | | | 0.768 |
| | The company's CSR activities are highly related to its target customers. | | | | 0.728 |
| CSR Impact | The company's CSR activities are on a scale sufficient to work. | | / | | / |
| | The company's CSR activities will help solve social problems in the long term. | 4.02 (0.738) | 0.725 | 3.63 (0.695) | / |
| | The company's CSR activities are making a meaningful contribution to solving social problems. | | 0.639 | | 0.676 |
| | The company's CSR activities help to recognize social problems. | | 0.834 | | 0.844 |
| | The company's CSR activities make me willing to participate. | | 0.766 | | 0.709 |
| Brand Attitude | I like this brand. | | 0.671 | | 0.764 |
| | I think positively of this brand. | 4.15 (0.631) | 0.736 | 3.91 (0.662) | 0.753 |
| | I have a crush on this brand. | | / | | 0.850 |
| | I have a good feeling about this brand. | | 0.756 | | 0.795 |
| | I am familiar with this brand. | | 0.684 | | / |
| Purchase Intention | I am interested in purchasing products/services from companies that do CSR activities. | | 0.818 | | / |
| | I am more likely to purchase products/services from companies with CSR activities. | | 0.762 | | 0.633 |
| | I am willing to buy first if the product/service fee of a company with CSR activities is similar. | 4.14 (0.657) | 0.765 | 3.81 (0.701) | 0.629 |
| | I will continue to use CSR's goods/services no matter how much the cost of goods/services increases. | | / | | 0.833 |
| | If the company that conducts CSR activities is in my immediate area, I will first use the company's products/services. | | 0.716 | | 0.814 |

Reliability analysis was performed for reliability testing of measurement items. Cronbach's α was used for internal consistency testing. Results found that the reliability of items is valid since all variables exceeded 0.7. Results are shown in Table 3.

**Table 3.** Correlation and Reliability Analysis (Korea)

|  | CSR Sustainability | CSR Fit | CSR Impact | Brand Attitude | Purchase Intention | Cronbach's α |
|---|---|---|---|---|---|---|
| CSR Sustainability | 1 |  |  |  |  | 0.781 |
| CSR Fit | .351** | 1 |  |  |  | 0.763 |
| CSR Impact | .402** | .517** | 1 |  |  | 0.736 |
| Brand Attitude | .445** | .432** | .523** | 1 |  | 0.732 |
| Purchase Intention | .343** | .373** | .456** | .532** | 1 | 0.760 |

Note: **$p<0.01$ (two-tailed test).

In China, reliability analysis was also performed for measurement items. For this analysis, it is assumed that there are no significant problems because values exceeded the 0.7 threshold (see Table 4).

**Table 4.** Correlation and Reliability Analysis (China)

|  | CSR Sustainability | CSR Fit | CSR Impact | Brand Attitude | Purchase Intention | Cronbach's α |
|---|---|---|---|---|---|---|
| CSR Sustainability | 1 |  |  |  |  | 0.713 |
| CSR Fit | .364** | 1 |  |  |  | 0.745 |
| CSR Impact | .470** | .448** | 1 |  |  | 0.703 |
| Brand Attitude | .368** | .310** | .409** | 1 |  | 0.727 |
| Purchase Intention | .444** | .290** | .387** | .457** | 1 | 0.723 |

Note: **$p<0.01$ (two-tailed test).

### 1. Hypothesis Testing of Korean Samples

As shown in Table 5, the R2 used to measure the suitability of the model is 0.360. This means that the regression explains 36% of the variance in the data. In other words, 36 % of brand attitude variation depends on the three independent variables (three CSR attributes). Looking at the regression results of the independent variables (CSR attributes) and dependent variables (brand attitude), the three variables of CSR sustainability ($\beta$=0.251, t=4.075), CSR fit ($\beta$=0.171, t=2.590), and CSR impact ($\beta$=0.334, t=4.948) have statistically significant positive effects on brand attitude.

**Table 5.** The Relationships between CSR Attributes and Brand Attitude (Korea)

| Dependent Var. | Independent Variables | $R^2$ | Adjusted $R^2$ | F | B (t-Value) | Result |
|---|---|---|---|---|---|---|
| Brand Attitude | CSR Sustainability | 0.360 | 0.351 | 38.982 | 0.251(4.075***) | Accepted |
| | CSR Fit | | | | 0.171(2.590**) | Accepted |
| | CSR Impact | | | | 0.334(4.948***) | Accepted |

Note: *$p$<0.05, **$p$<0.01, ***$p$<0.001.

As displayed in Table 6, the R2 used to measure the suitability of the model is 0.255. This means that the regression explains 25.5% of the variance in the data. Namely, 25.5 % of the purchase intention variation depends on the three independent variables (three CSR attributes). Looking at the regression results of the independent variables (CSR attributes) and dependent variables (purchase intention), the three variables of CSR sustainability ($\beta$=0.164, t=2.464), CSR fit ($\beta$=0.155, t=2.180), and CSR impact ($\beta$=0.310, t=4.260) have statistically significant positive effects on purchase intention.

**Table 6.** The Relationships Between CSR Attributes and Purchase Intention (Korea)

| Dependent Var. | Independent Variables | $R^2$ | Adjusted $R^2$ | F | B (t-Value) | Result |
|---|---|---|---|---|---|---|
| Purchase Intention | CSR Sustainability | 0.255 | 0.244 | 23.756 | 0.164(2.464*) | Accepted |
| | CSR Fit | | | | 0.155(2.180*) | Accepted |
| | CSR Impact | | | | 0.310(4.260***) | Accepted |

Note: *$p$<0.05, **$p$<0.01, ***$p$<0.001.

As shown in Table 7, the R2 used to measure the suitability of the model is 0.283. Looking at the regression results, brand attitude ($\beta=0.532$, t=9.114) has statistically significant positive effects on purchase intention.

**Table 7.** The Relationships Between Brand Attitudes and Purchase Intention (Korea)

| Dependent Var. | Independent Variables | $R^2$ | Adjusted $R^2$ | F | B(t-Value) | Result |
|---|---|---|---|---|---|---|
| Purchase Intention | Brand Attitude | 0.283 | 0.280 | 83.063 | 0.532(9.114***) | Accepted |

Note: *$p<0.05$, **$p<0.01$, ***$p<0.001$.

Verification results for the mediating effects of brand attitude between independent and dependent variables are shown in Table 8. A partial mediating effect was found that affects all dependent variables and parameters simultaneously, including CSR sustainability ($\beta=0.474$, t=7.315), CSR fit ($\beta=0.456$, t =7.160), and CSR impact ($\beta=0.405$, t=6.078).

**Table 8.** Mediating the Effect Test of Brand Attitude (Korea).

| | Stage of Mediating Test | $\beta$ | t | p | $R^2$ | Adjusted $R^2$ | Result of Test |
|---|---|---|---|---|---|---|---|
| CSR Sustainability/ Brand Attitude/ Purchase Intention | Stage 1 | 0.445 | 7.204 | 0.000 | 0.198 | 0.194 | Partial Mediation |
| | Stage 2 | 0.343 | 5.288 | 0.000 | 0.117 | 0.113 | |
| | Stage 3 (Ind_Var) | 0.132 | 2.037 | 0.043 | 0.297 | 0.291 | |
| | Stage 3 (Med_Var) | 0.474 | 7.315 | 0.000 | | | |
| CSR Fit /Brand Attitude/ Purchase Intention | Stage 1 | 0.432 | 6.933 | 0.000 | 0.186 | 0.182 | Partial Mediation |
| | Stage 2 | 0.373 | 5.823 | 0.000 | 0.139 | 0.135 | |
| | Stage 3 (Ind_Var) | 0.176 | 2.758 | 0.006 | 0.309 | 0.302 | |
| | Stage 3 (Med_Var) | 0.456 | 7.160 | 0.000 | | | |
| CSR Impact /Brand Attitude/ Purchase Intention | Stage 1 | 0.523 | 8.889 | 0.000 | 0.273 | 0.270 | Partial Mediation |
| | Stage 2 | 0.456 | 7.422 | 0.000 | 0.208 | 0.204 | |
| | Stage 3 (Ind_Var) | 0.244 | 3.669 | 0.000 | 0.327 | 0.320 | |
| | Stage 3 (Med_Var) | 0.405 | 6.078 | 0.000 | | | |

Note: *$p<0.05$, **$p<0.01$, ***$p<0.001$.

### 2. Hypothesis Testing of China Samples

As displayed in Table 9, the R2 used to measure the suitability of the model is 0.218. This means that the regression explains 21.8% of the variance in the data. In other words, 21.8% of the brand attitude variation depends on the three independent variables (three CSR attributes). Looking at the regression results of the independent variables (CSR attributes) and dependent variables (brand attitude), the two variables of CSR sustainability ($\beta$=0.202, t=2.820) and CSR impact ($\beta$=0.260, t=3.486) have statistically significant positive effects on brand attitude. On the other hand, CSR fit ($\beta$=0.120, t=1.702) was not significant. Therefore, hypothesis 1-2 is rejected.

**Table 9.** The Relationships Between CSR Attributes and Brand Attitude (China)

| Dependent Var. | Independent Variables | $R^2$ | Adjusted $R^2$ | F | B (t-Value) | Result |
|---|---|---|---|---|---|---|
| | CSR Sustainability | | | | 0.202（2.820**） | Accepted |
| Brand Attitude | CSR Fit | 0.218 | 0.206 | 18.911 | 0.120（1.702） | Rejected |
| | CSR Impact | | | | 0.260（3.486***） | Accepted |

Note: *$p$<0.05, **$p$<0.01, ***$p$<0.001.

As shown in Table 10, the R2 is 0.243. This means that 24.3% of purchase intention variation depends on the three independent variables (three CSR attributes). Looking at the regression results of the independent variables (CSR attributes) and dependent variables (brand attitude), the two variables of CSR sustainability ($\beta$=0.320, t=4.548) and CSR impact ($\beta$=0.198, t=2.699) have statistically significant positive effects on purchase intention. On the other hand, CSR fit ($\beta$=0.085, t=1.227) was not significant. Therefore, hypothesis 2-2 is rejected.

**Table 10.** The Relationships Between CSR Attributes and Purchase Intention (China)

| Dependent Var. | Independent Variables | $R^2$ | Adjusted $R^2$ | F | B (t-Value) | Result |
|---|---|---|---|---|---|---|
| | CSR Sustainability | | | | 0.320（4.548***） | Accepted |
| Purchase Intention | CSR Fit | 0.243 | 0.232 | 21.862 | 0.085（1.227） | Rejected |
| | CSR Impact | | | | 0.198（2.699**） | Accepted |

Note: *$p$<0.05, **$p$<0.01, ***$p$<0.001.

As displayed in Table 11, the R² used to measure the suitability of the model is 0.209. Looking at the regression results, brand attitude (β=0.457, t=7.368) has statistically significant positive effects on purchase intention.

**Table 11.** The Relationships Between Brand Attitudes and Purchase Intention (China)

| Dependent Var. | Independent Variables | $R^2$ | Adjusted R² | F | B (t-Value) | Result |
|---|---|---|---|---|---|---|
| Purchase Intention | Brand Attitude | 0.209 | 0.205 | 54.292 | 0.457(7.368***) | Accepted |

Note: *p<0.05, **p<0.01, ***p<0.001.

Results for the mediating effects of brand attitude between independent and dependent variables are shown in Table 12. Variables of CSR sustainability (β=0.339, t=5.387), CSR fit (β=0.406, t=6.307), and CSR impact (β=0.359 and t=5.435) simultaneously influenced the dependent and mediating variables (i.e., direct and indirect effects) in stage 3.

**Table 12.** Mediating the Effect Test of Brand Attitude (China)

| | Stage of Mediating Test | β | t | p | R² | Adjusted R² | Result of Test |
|---|---|---|---|---|---|---|---|
| CSR Sustainability/ Brand Attitude/ Purchase Intention | Stage 1 | 0.368 | 5.675 | 0.000 | 0.135 | 0.131 | |
| | Stage 2 | 0.444 | 7.113 | 0.000 | 0.197 | 0.193 | |
| | Stage 3 (Ind_Var) | 0.319 | 5.069 | 0.000 | 0.297 | 0.290 | Partial Mediation |
| | Stage 3 (Med_Var) | 0.339 | 5.387 | 0.000 | | | |
| CSR Fit /Brand Attitude/ Purchase Intention | Stage 1 | 0.310 | 4.679 | 0.000 | 0.096 | 0.092 | |
| | Stage 2 | 0.290 | 4.353 | 0.000 | | | |
| | Stage 3 (Ind_Var) | 0.164 | 2.556 | 0.011 | 0.084 | 0.080 | Partial Mediation |
| | Stage 3 (Med_Var) | 0.406 | 6.307 | 0.000 | | | |
| CSR Impact /Brand Attitude/ Purchase Intention | Stage 1 | 0.409 | 6.425 | 0.000 | 0.233 | 0.226 | |
| | Stage 2 | 0.387 | 6.016 | 0.000 | | | |
| | Stage 3 (Ind_Var) | 0.240 | 3.638 | 0.000 | 0.167 | 0.163 | Partial Mediation |
| | Stage 3 (Med_Var) | 0.359 | 5.435 | 0.000 | | | |

Note: *p<0.05, **p<0.01, ***p<0.001.

## V. Conclusions

### 1. Summary and Implications

This study refined the results of previous studies by examining CSR attributes that focus on consumer behavior and by suggesting the influence of these attributes (CSR sustainability, CSR fit, CSR impact) on consumers' brand attitude and purchase intention. In this study, we also established a research model and conducted empirical analyses on the electronic industries in South Korea (Chungcheong Province) and China (Shandong Province and Hebei Province).

Analyzing factors that influence consumers' assessment of a company's CSR attributes and examining the interrelationships between brand attitude and purchase intention are very important processes for demonstrating the effectiveness of a company's CSR activities (Kim & Lee, 2020; Liu & Jung, 2021).

The findings obtained from empirical analyses are as follows. The first is the effect of CSR attributes on brand attitude and purchase intention. In the case of Korea, the CSR fit, CSR sustainability, and CSR impact, which are CSR attributes, all have a significant positive impact on brand attitude and purchase intentions, as found in previous research. Namely, both hypotheses 1 and 2 were adopted. In China, CSR sustainability and CSR impact had significant positive impacts on brand attitudes and purchase intentions.

Meanwhile, there are significant differences in consumers' perception of CSR authenticity, depending on the timing of CSR activities – e.g., pre-and-post-crisis based on the time of crisis (An et al., 2018). Therefore, during the COVID-19 pandemic, consumers' views on the authenticity of CSR activities have also changed. In other words, CSR activities can feature CSR authenticity even if they are not necessarily compatible with corporate products or images under the coronavirus situation. For example, consumers can feel CSR authenticity when it comes to purchasing and donating masks that are unrelated to a company's business. If consumers

have a positive perception of CSR activities, they form a positive attitude toward a company's brand and eventually switch to purchasing intentions. Finally, consumers perceived brand attitude positively as the level of CSR attributes increased, and brand attitude had a positive effect on purchase intention.

The second is the relationship between brand attitude and purchase intention. In both Korea and China, brand attitudes had a positive impact on purchase intention. According to Fishbein and Ajzen's (1975) Behavioral Intention Model, the more favorable the consumer is to a brand, the more willing they are to purchase it. It helps to understand the impact of different types of CSR attributes on positive customer behavior, and if the customer recognizes CSR activities as a reward to the community, it leads to increased purchase intention (Ahn & Soeiro, 2021).

The third is the positive mediating effect of brand attitude between CSR attributes and purchase intention. In order for CSR activities to eventually be converted to corporate revenue, not only are CSR activities important, but they also need to consider the consumers' brand attitude at the same time. As a result of empirical analyses, both Korea and China showed positive partial mediating effects. That is, CSR attributes may affect purchase intention through brand attitude or may directly affect purchase intention.

The implications of this study are presented separately as academic, managerial, and policy implications. Firstly, the following are the academic implications of this research. The results of this study confirm the results of previous studies that CSR attributes are important variables affecting the evaluation of brand attributes and purchase intention. In previous research, 'general CSR activities' affected brand attitude and purchase intention. Furthermore, this study demonstrated that attributes of CSR activities affect brand attitudes and purchase intention. Future studies should cover a variety of CSR attributes and dependent variables based on the results of this study, and a more systematic understanding of consumers' perception and

evaluation of CSR activities will be possible.

Secondly, the managerial implications of this study are as follows. First, CSR activities are mainly conducted in terms of marketing. In this case, a company's CSR attributes can be identified and introduced into a marketing strategy. However, in recent years, CSR activities have been addressed at an enterprise-wide level, such as ESG management. This phenomenon is considered desirable, and more detailed CSR attributes and strategies are also required in this case. Second, if CSR activities are comprehensively considered at the corporate level, sustainability, fit, and impact of CSR activities will have a positive effect on corporate performance. Namely, if they are properly reflected, it is expected that consumers will have a positive effect on their attitude toward the brand and purchase intention. Consequently, it is important to implement CSR activities sustainably under mid-to-long-term strategies rather than anticipating improved short-term performance when pursuing CSR activities. It would also be desirable to engage in CSR activities that are well suited to the image of the company and that are appropriate to the nature of the company. Generally, in the case of companies implementing various CSR activities, consumers do not evaluate the company positively if the consistency between CSR activities is low, even if the CSR fit is high (Yoo & Lee, 2018).

In addition, the higher the issue of CSR activities is related to products or target markets, the more consumers tend to interpret CSR activities as profit-seeking, so the influence of suitability variables on CSR effects varies depending on the situation (Park & Hwang, 2016 ).

Thirdly, study results provide valuable policy implications. When carrying out CSR activities, not only the company's own efforts but also government support is important. Therefore, governments should establish support strategies and policies based on the attributes of CSR activities. In addition, since CSR activities affect brand attitudes, strategic considerations for consumers' brand attitudes are also required. Furthermore, policymakers should recognize

that consumers' perceptions or demands for CSR are changing as society progresses. Especially, there has been a growing interest in ESG (environmental, social, governance) in recent years. Therefore, when policymakers support CSR activities, guidelines and strategies for corporate-wide ESG activities should also be considered.

## 2. Limitations and Direction for Future Research

Despite its theoretical, management, and policy contributions, this study has several limitations: First, this research selected the electronics industries in China and South Korea and examined how CSR attributes influence consumers' brand attitudes and purchase intention. Therefore, when applied to other industrial fields, consumers may form different perceptions of CSR activities (Piao & Hwang, 2016). In addition, samples used in this study included people mainly concentrated in their 20s and 40s. In future studies, it is necessary to better generalize results by considering different age groups and social backgrounds.

Second, in this study, we focused on the effects of CSR attributes on purchase intention through brand attitude. However, a variety of other variables may affect dependent variables (or purchase intention). Future studies are encouraged to utilize the results of this study by extending the model and including new variables.

Third, the survey samples of this study have regional limitations. Korean samples were collected mainly from Chungcheong Province, while most samples from China were collected from Shandong Province and Habuk Province. Of course, it is also meaningful to compare a medium city rather than a large one. However, there will be a limit to the generalization of research results. Despite these limitations, this study has many important implications. Therefore, we look forward to future studies that overcome the limitations of this study.

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