SAMSUNG SDS CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED FINANCIAL STATEMENTS
AS OF AND FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

ATTACHMENT: INDEPENDENT AUDITORS' REPORT

SAMSUNG SDS CO., LTD.

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INDEPENDENT AUDITORS' REPORT

English Translation of Independent Auditors' Report Originally Issued in Korean on March 15, 2018.

To the Shareholders and the Board of Directors of
Samsung SDS Co., Ltd.:

Report on the Consolidated Financial Statements

We have audited the accompanying consolidated financial statements of Samsung SDS Co., Ltd. and its subsidiaries (the "Group"), which comprise the consolidated statements of financial position as of December 31, 2017 and 2016, respectively, and the related consolidated statements of comprehensive income, consolidated statements of changes in shareholders' equity and consolidated statements of cash flows, all expressed in Korean won, for the years ended, December 31, 2017 and 2016, respectively, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Korean International Financial Reporting Standards ("K-IFRSs"), and for such internal control as management determines is necessary to enable the preparation of the consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an audit opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with Korean Standards on Auditing ("KSAs"). Those standards require that we comply with ethical requirements and plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Deloitte.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Group as of December 31, 2017 and 2016, respectively, and its financial performance and its cash flows for the years ended December 31, 2017 and 2016, respectively, in accordance with K-IFRSs.

Deloitte Anjin LLC

March 15, 2018

Notice to Readers

This report is effective as of March 15, 2018, the auditors' report date. Certain subsequent events or circumstances may have occurred between the auditors' report date and the time the auditors' report is read. Such events or circumstances could significantly affect the consolidated financial statements and may result in modifications to the auditors' report.

SAMSUNG SDS CO., LTD.
AND ITS SUBSIDIARIES (the “Group”)

CONSOLIDATED FINANCIAL STATEMENTS
AS OF AND FOR THE YEARS ENDED
DECEMBER 31, 2017 AND 2016

“The accompanying consolidated financial statements, including all footnote disclosures, were prepared by, and are the responsibility of, the Group.”

Hong, Won Pyo

President and Chief Executive Officer
SAMSUNG SDS CO., LTD.

SAMSUNG SDS CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

AS OF DECEMBER 31, 2017 AND 2016

	Notes	Korean won December 31, 2017	Korean won December 31, 2016
ASSETS:			
CURRENT ASSETS:			
Cash and cash equivalents	5 and 7	₩ 931,461,393,278	₩ 1,190,227,458,620
Short-term financial instruments	6 and 7	1,993,797,925,148	1,265,550,667,695
Trade receivables	7 and 9	1,209,629,541,269	1,046,092,371,327
Other receivables	7, 9 and 23	752,347,002,331	828,210,820,373
Prepayments		50,929,792,621	51,514,109,531
Prepaid expenses		60,612,034,305	71,364,992,864
Inventories	10	24,760,255,484	16,226,062,568
Other current assets	7 and 9	93,960,630,430	79,261,169,861
Total current assets		5,117,498,574,866	4,548,447,652,839
NON-CURRENT ASSETS:			
Available-for-sale financial assets	7, 8, 11, 19 and 30	12,651,779,719	7,465,312,600
Investments in associates	13	40,540,078,417	40,965,317,356
Property and equipment	4, 14 and 19	1,028,557,824,366	1,051,961,162,684
Intangible assets	4 and 15	934,859,502,433	1,041,387,745,961
Deposits	7	66,995,507,157	75,451,932,821
Long-term prepaid expenses		357,450,549	484,234,125
Deferred tax assets	28	32,572,487,036	19,560,516,941
Net defined benefit assets	18	18,475,464,964	30,317,506,022
Other non-current assets	6, 7 and 9	25,252,210,300	25,962,477,030
Total non-current assets		2,160,262,304,941	2,293,556,205,540
Total assets		₩ 7,277,760,879,807	₩ 6,842,003,858,379
LIABILITIES:			
CURRENT LIABILITIES:			
Trade payables	7 and 30	₩ 443,247,815,452	₩ 389,602,937,320
Other payables	7 and 30	67,797,699,978	101,203,970,463
Short-term borrowings	7, 16, 19 and 30	820,296,000	2,608,483,040
Current portion of corporate bond	7,16 and 30	10,000,000	-
Advances received	23	156,455,270,861	169,878,014,096
Withholdings		13,695,212,967	10,014,092,532
Accrued expenses	7 and 30	423,284,546,673	462,285,528,206
Income tax payable		97,148,199,186	75,740,758,438
Current portion of long-term borrowings	7, 16, 19 and 30	-	2,464,460,579
Current portion of provisions	17	15,899,051,770	8,780,939,064
Other current liabilities	7 and 30	106,504,445,697	124,805,875,744
Total current liabilities		1,324,862,538,584	1,347,385,059,482
NON-CURRENT LIABILITIES:			
Net defined benefit liabilities	18	10,926,995,813	6,198,365,245
Deferred tax liabilities	28	164,663,348,882	144,865,137,356
Long-term borrowings	7, 16, 19 and 30	-	1,615,271,083
Long-term accrued expenses	7 and 30	38,608,592,197	35,691,679,672
Provisions	17	14,847,659,688	15,114,250,960
Corporate bond	7,16 and 30	-	10,000,000
Other non-current liabilities	7	4,422,308,000	-
Total non-current liabilities		233,468,904,580	203,494,704,316
Total liabilities		1,558,331,443,164	1,550,879,763,798

(Continued)

SAMSUNG SDS CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF FINANCIAL POSITION (CONTINUED)

AS OF DECEMBER 31, 2017 AND 2016

	Notes	Korean won December 31, 2017	Korean won December 31, 2016
SHAREHOLDERS' EQUITY:			
Common stock	20	₩ 38,688,900,000	₩ 38,688,900,000
Share premium		1,297,466,852,618	1,297,466,852,618
Retained earnings	21	4,347,047,622,867	3,874,712,651,378
Other component of equity	22	(124,924,831,837)	(70,173,902,172)
Non-controlling interests		161,150,892,995	150,429,592,757
Total shareholders' equity		5,719,429,436,643	5,291,124,094,581
Total liabilities and shareholders' equity		₩ 7,277,760,879,807	₩ 6,842,003,858,379

(Concluded)

See notes.

SAMSUNG SDS CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

	Notes	Korean won 2017	Korean won 2016
REVENUES	4, 23 and 31	₩ 9,299,206,129,920	₩ 8,180,186,860,839
COST OF REVENUES	24 and 31	7,804,602,140,616	6,762,393,574,254
GROSS PROFIT		1,494,603,989,304	1,417,793,286,585
SELLING AND ADMINISTRATIVE EXPENSES	24 and 25	763,044,840,695	790,700,991,315
OPERATING PROFIT	4	731,559,148,609	627,092,295,270
NON-OPERATING ITEMS:			
Other non-operating income	26 and 31	41,215,803,934	89,326,630,558
Other non-operating expenses	26 and 31	37,251,002,915	19,239,439,765
Finance income	27	90,197,224,346	126,497,825,680
Finance expenses	27	76,086,747,335	75,533,553,009
Gain (loss) on valuation/disposal of investments in associates, net	13	2,461,278,648	3,717,976,928
		20,536,556,678	124,769,440,392
PROFIT BEFORE INCOME TAX EXPENSE		752,095,705,287	751,861,735,662
INCOME TAX EXPENSE	28	210,323,428,014	237,534,022,596
NET INCOME		541,772,277,273	514,327,713,066
OTHER COMPREHENSIVE INCOME (LOSS):			
Item not subsequently reclassified to net income:			
Remeasurement of net defined benefit liabilities	18	24,783,402,057	41,154,816,876
Items subsequently reclassified to net income:			
Valuation gain (loss) on AFS financial assets	11	2,177,512,468	(5,979,339)
Capital change in equity method	13	(2,723,317,587)	96,708,159
Cumulative effect of foreign currency translation		(88,031,612,812)	(1,671,071,334)
		(88,577,417,931)	(1,580,342,514)
		(63,794,015,874)	39,574,474,362
TOTAL COMPREHENSIVE INCOME		₩ 477,978,261,399	₩ 553,902,187,428

(Continued)

SAMSUNG SDS CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (CONTINUED)

FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

		Korean won			
	Notes		2017		2016
NET INCOME ATTRIBUTABLE TO:					
Owners of the Group		₩	530,347,610,989	₩	463,858,323,993
Non-controlling interests			11,424,666,284		50,469,389,073
COMPREHENSIVE INCOME ATTRIBUTABLE TO:					
Owners of the Group			466,762,850,365		499,522,388,082
Non-controlling interests			11,215,411,034		54,379,799,346
EARNINGS PER SHARE:					
Basic earnings per share	32	₩	6,856	₩	5,997
Diluted earnings per share	32	₩	6,856	₩	5,997

(Concluded)

See notes.

SAMSUNG SDS CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY

FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

	Korean won						
	Common stock	Share premium	Retained earnings	Other component of equity	Subtotal	Non-controlling interests	Total
Balance as of January 1, 2016	₩ 38,688,900,000	₩ 1,297,466,852,618	₩ 3,449,529,420,385	₩ (196,924,258,368)	₩ 4,588,760,914,635	₩ 188,090,863,589	₩ 4,776,851,778,224
Net income	-	-	463,858,323,993	-	463,858,323,993	50,469,389,073	514,327,713,066
Net change in fair value of available-for-sale financial assets	-	-	-	(5,979,339)	(5,979,339)	-	(5,979,339)
Capital change in equity method	-	-	-	96,708,159	96,708,159	-	96,708,159
Remeasurement of the net defined benefit liabilities	-	-	-	40,604,432,006	40,604,432,006	550,384,870	41,154,816,876
Cumulative effect of foreign currency translation	-	-	-	(5,031,096,737)	(5,031,096,737)	3,360,025,403	(1,671,071,334)
Dividends	-	-	(38,675,093,000)	-	(38,675,093,000)	(1,522,447,250)	(40,197,540,250)
Changes in ownership interests in subsidiaries	-	-	-	91,086,292,107	91,086,292,107	(90,518,622,928)	567,669,179
Balance as of December 31, 2016	₩ 38,688,900,000	₩ 1,297,466,852,618	₩ 3,874,712,651,378	₩ (70,173,902,172)	₩ 5,140,694,501,824	₩ 150,429,592,757	₩ 5,291,124,094,581
Balance as of January 1, 2017	₩ 38,688,900,000	₩ 1,297,466,852,618	₩ 3,874,712,651,378	₩ (70,173,902,172)	₩ 5,140,694,501,824	₩ 150,429,592,757	₩ 5,291,124,094,581
Net income	-	-	530,347,610,989	-	530,347,610,989	11,424,666,284	541,772,277,273
Valuation gain on available-for-sale financial assets	-	-	-	2,153,465,580	2,153,465,580	24,046,888	2,177,512,468
Capital change in equity method	-	-	-	(2,723,317,587)	(2,723,317,587)	-	(2,723,317,587)
Remeasurement of the net defined benefit liabilities	-	-	-	24,951,126,358	24,951,126,358	(167,724,301)	24,783,402,057
Cumulative effect of foreign currency translation	-	-	-	(87,966,034,975)	(87,966,034,975)	(65,577,837)	(88,031,612,812)
Dividends	-	-	(58,012,639,500)	-	(58,012,639,500)	(1,522,447,250)	(59,535,086,750)
Changes in ownership interests in subsidiaries	-	-	-	8,833,830,959	8,833,830,959	1,028,336,454	9,862,167,413
Balance as of December 31, 2017	₩ 38,688,900,000	₩ 1,297,466,852,618	₩ 4,347,047,622,867	₩ (124,924,831,837)	₩ 5,558,278,543,648	₩ 161,150,892,995	₩ 5,719,429,436,643

See notes.

SAMSUNG SDS CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016

	Note	Korean won 2017	Korean won 2016
CASH FLOWS FROM OPERATING ACTIVITIES:			
Cash generated from operating activities	29	₩ 968,922,950,760	₩ 1,009,744,763,303
Interest received		30,259,865,840	26,482,869,053
Interest paid		(614,144,156)	(712,893,399)
Dividends received		18,175,000	10,450,000
Income taxes paid		(163,739,656,158)	(412,707,220,024)
		834,847,191,286	622,817,968,933
CASH FLOWS FROM INVESTING ACTIVITIES:			
Net increase in short-term financial instruments		(761,199,121,276)	(171,646,952,868)
Decrease in other current asset		621,650,641	446,094,456
Decrease in long-term financial instruments		4,500,000	500,000
Disposal of property and equipment		1,561,431,367	187,678,689,097
Disposal of intangible assets		106,430,563	11,842,514,039
Disposal of available-for-sale financial assets		2,882,572	26,973,980
Disposal of investments in associates		-	293,054,916
Decrease in deposits		519,211,000	7,859,720,187
Acquisition of property and equipment		(192,068,771,788)	(189,803,231,893)
Acquisition of intangible assets		(30,684,845,524)	(86,971,321,213)
Increase in deposits		(419,987,625)	(8,902,146,961)
Acquisition of available-for-sale financial assets		(2,313,599,745)	(3,935,237,631)
Decrease (increase) in other non-current assets		13,447,596,518	(619,591,683)
Cash inflows from business combination		-	(214,764,070)
		(970,422,623,297)	(253,945,699,644)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Proceed (repayments) from short-term borrowings		(1,788,187,040)	35,180,720
Repayment of current portion of long-term borrowings		(4,079,731,662)	(3,420,639,063)
Proceed from long-term borrowings		-	997,015,831
Repayment of long-term borrowings		-	(1,666,150,889)
Decrease in other non-current long-term debt		(3,016,809,889)	-
Dividends		(59,535,086,750)	(40,197,540,250)
Establishment of subsidiary		774,385,884	-
		(67,645,429,457)	(44,252,133,651)
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS		(203,220,861,468)	324,620,135,638
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR		1,190,227,458,620	856,804,679,060
EFFECT OF EXCHANGE RATE CHANGE ON CASH AND CASH EQUIVALENTS		(55,545,203,874)	8,802,643,922
CASH AND CASH EQUIVALENTS, END OF YEAR		₩ 931,461,393,278	₩ 1,190,227,458,620

See notes.

SAMSUNG SDS CO., LTD. AND ITS SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

**AS OF DECEMBER 31, 2017 AND 2016,
AND FOR THE YEARS ENDED DECEMBER 31, 2017 AND 2016**

1. GENERAL:

Samsung SDS Co., Ltd. (the "Company") and its subsidiaries (collectively, the "Group") have prepared the consolidated financial statements in accordance with Korean International Financial Reporting Standards ("K-IFRS") 1110, *Consolidated Financial Statements.* The Company was incorporated on May 1, 1985, to engage in the information processing system implementation, software development and professional service related to information processing technology. The Company has signed comprehensive management service contracts for information systems operations with a majority of companies within the Samsung Group and also provides Information Technology ("IT") outsourcing services, including application operations to the aforementioned Samsung Group companies. In addition, the Company offers IT applications platform solutions services, such as manufacturing, logistics, retail and mobiles.

The Company is located at 125 Olympic-ro 35-gil, Songpa-gu, Seoul, Republic of Korea. The Company's common shares were listed on the Stock Market of Korea Exchange on November 14, 2014. As of December 31, 2017, the capital stock of the Company is ₩38,689 million, and the shareholders are as follows:

	Number of shares	Ownership (%)
Samsung Electronics Co., Ltd.	17,472,110	22.58%
Samsung C&T Corporation	13,215,822	17.08%
Lee, Jae-yong	7,116,555	9.20%
Lee, Bu-jin	3,018,859	3.90%
Lee, Suh-hyeon	3,018,859	3.90%
Others	33,535,595	43.34%
	77,377,800	100.00%

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

(1) Basis of preparation

The Group has prepared the consolidated financial statements in accordance with the K-IFRSs.

The principal accounting policies are set out below. Except for the effect of the amendments to K-IFRSs and new interpretations set out below, the principal accounting policies used to prepare the consolidated financial statements as of and for the year ended December 31, 2017, are consistent with the accounting policies used to prepare the consolidated financial statements as of and for the year ended December 31, 2016.

The accompanying consolidated financial statements have been prepared on a historical cost basis, except for certain non-current assets and financial instruments that are measured at fair values, as explained in the accounting policies below. Historical cost is based on the fair values of the consideration given.

1) Amendments to K-IFRSs and new interpretations that are mandatorily effective for the current year

In the current year, the Group has applied a number of amendments to K-IFRSs and new interpretations issued that are mandatorily effective accounting periods beginning on or after January 1, 2017.

Amendments to K-IFRS 1007, *Statement of Cash Flows*

The amendments require an entity to provide disclosures that enable users of financial statements to evaluate changes in liabilities arising from financing activities, including both cash and non-cash changes. Additional disclosure required related to the first-time application of these amendments in the current year is in Note 29. Consistent with the transition provisions of the amendments, the Group has not disclosed comparative information for the prior period. Apart from the additional disclosure in Note 29, the application of these amendments has no material impact on the disclosures or the amounts recognized in the Group's consolidated financial statements.

Amendments to K-IFRS 1012, *Income Taxes*

The amendments clarify that in evaluating the deferred tax assets arising from deductible temporary difference of debt instruments measured at fair value, the carrying amount of an asset does not limit the estimation of probable future taxable profits. The application of these amendments has no material impact on the disclosures or the amounts recognized in the Group's consolidated financial statements.

Annual Improvements to K-IFRS 2014-2016 Cycle

The Group has applied the amendments to K-IFRS 1112, *Share-based Payment*, included in the annual improvements to K-IFRS 2014-2016 Cycle for the first time in the current year. The other amendments included in this package are not yet mandatorily effective and they have not been early adopted by the Group.

The amendments state that an entity need not provide summarized financial information for interests in subsidiaries, associates or joint ventures that are classified (or included in a disposal group that is classified) as held for sale. The amendments clarify that this is the only concession from the disclosure requirements for K-IFRS 1112.

2) New and revised K-IFRSs in issue, but not yet effective

The Group has not applied the following new and revised K-IFRSs that have been issued, but are not yet effective.

K-IFRS 1109, *Financial Instruments*

The amendments to K-IFRS 1109 contain the requirements for the classification and measurement of financial assets and financial liabilities based on a business model whose objective is achieved both by collecting contractual cash flows and selling financial assets and based on the contractual terms that give rise on specified dates to cash flows, impairment methodology based on the expected credit losses and broadened types of instruments that qualify as hedging instruments, the types of risk components of non-financial items that are eligible for hedge accounting and the change in the hedge effectiveness test. The amendments are effective for annual periods beginning on or after January 1, 2018.

In principle, new K-IFRS 1109 should be applied retrospectively. However, there are exceptional clauses, such as the exemption of rewriting comparative information in case of classification, measurement and impairment of financial instruments. In case of risk aversion accounting, it is applied prospectively, except for some exceptions, like time value accounting of options.

Key features of K-IFRS 1109, are 1) classification and measurement of financial assets that reflect the business model in which the assets are managed and their cash flow characteristics, 2) impairment methodology that reflects 'expected credit loss' ("ECL") model for financial assets and 3) expanded scope of hedged items and hedging instruments that qualify for hedge accounting and changes in assessment method for effect of hedging relationships.

With the introduction of K-IFRS 1109, necessary implementation procedures include preparation of the financial impact analysis, establishment of accounting policies and system and its stabilization. The consolidated financial statements of the year of adoption are affected not only by the accounting policies judgmentally set forth by the management, but also by financial instruments that the Group holds or by the economic conditions during the period.

The Group conducted a preliminary assessment of the potential impact to its consolidated financial statements as of and for the year ended December 31, 2017, based on the current situation and available information to the financial impact of the initial adoption of K-IFRS 1109. Based on additional information, the Group is analyzing more specific financial impact and internal management processes, which are related to financial impact. Furthermore, the financial impact by adopting K-IFRS 1109 may be subject to change based on additional information available to the Group in the future.

A. Classification and measurement of financial assets

When the Group adopts new K-IFRS 1109, the Group classifies financial assets as seen in the below table based on the entity's business model for managing the financial assets and the contractual cash flow characteristics of the financial asset: as measured at amortized cost, fair value through other comprehensive income ("FVOCI") or fair value through profit or loss (FVTPL). If the host contract is determined in a hybrid contract, an entity may classify the entire hybrid contract as a financial asset rather than separating the embedded derivative from the host contract.

	Contractual cash flow characteristic	
Business model	Solely payments of principal and interest	Otherwise
Objective is to hold financial assets in order to collect contractual cash flows	Measured at amortized cost (*1)	
The financial asset is held within a business model, whose objective is achieved by both collecting contractual cash flows and selling financial assets	FVOCI (*1)	
Objective is to sell financial assets and others	FVTPL	FVTPL (*2)

(*1) An entity may designate as measured at FVTPL to eliminate or significantly reduce an accounting mismatch (irrevocable).
(*2) An entity may designate as FVOCI for investments in equity instruments that are not held for trading (irrevocable).

As under K-IFRS 1109, the conditions of financial assets to be measured at amortized cost or FVOCI are stricter than under the existing standard, K-IFRS 1039, the adoption of K-IFRS 1109 would potentially increase the proportion of financial assets that are measured at FVTPL, it may increase volatility in the Group's profit or loss.

The Group has loans and receivables amounting to ₩3,502,981 million, and available-for-sale ("AFS") financial assets ₩12,652 million as of December 31, 2017.

As under K-IFRS 1109, a financial asset is measured at amortized cost if it meets both of the following conditions and is not designated as at FVTPL: 1) the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding and 2) the asset is held within a business model whose objective is to hold assets to collect contractual cash flows. The Group measures loans and receivables amounting to ₩3,502,981 million at amortized cost as of December 31, 2017.

If the Group applies K-IFRS 1109 to the financial assets as of December 31, 2017, the Group does not expect that the financial impact on the Group's consolidated financial statements will be material, because the Group's financial assets are contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal, which will be classified as amortized cost.

As under K-IFRS 1109, on initial recognition of equity investment that is not held for trading, the Group may irrevocably elect to present subsequent changes in fair value in other comprehensive income and will not reclassify those items in other comprehensive income to profit or loss subsequently. The Group's equity investments classified as at AFS financial assets are ₩12,652 million as of December 31, 2017.

A financial asset is measured at FVTPL if it meets either of the following conditions and the equity investment is not designated as at FVOCI: 1) the asset is held within a business model whose objective is achieved by selling financial assets; or 2) the contractual terms of the financial asset give rise on specified dates to cash flow that are not solely payments of principal and interest on the principal amount outstanding.

B. Classification and measurement of financial liabilities

For financial liabilities designated at FVTPL using the fair value option, K-IFRS 1109 requires the effects of changes in fair value attributable to an entity's credit risk to be recognized in other comprehensive income. The amounts presented in other comprehensive income are not subsequently transferred to profit or loss, unless this treatment of the credit risk component creates or enlarges a measurement mismatch.

As a portion of fair value change, which was recognized in profit or loss under the existing standard, K-IFRS 1039, will be presented in other comprehensive income under K-IFRS 1109 and profit or loss related to valuation of financial liabilities is likely to decrease.

C. Impairment: Financial assets and contract assets

Under K-IFRS 1039, the impairment is recognized only when there is an objective evidence of impairment based on incurred loss model, but under K-IFRS 1109, impairment is recognized based on ECL model for debt instrument, lease receivables, contract assets, loan contracts and financial guarantee contracts that are measured at amortized cost or FVOCI.

In K-IFRS 1109, financial assets are classified into three stages depending on the extent of increase in the credit risk on financial instruments since initial recognition. The loss allowance is measured at an amount equal to 12-month expected credit losses or the lifetime expected credit losses and therefore, credit losses will be recognized earlier than under the incurred loss model of K-IFRS 1039.

	Case (*1)	The loss allowance
Stage 1	Non-significant increase in credit risk since initial recognition (*2)	12-month expected credit losses: The portion of lifetime-expected credit losses that represent the expected credit losses that result from default events on a financial instrument that are possible within the 12 months after the reporting date.
Stage 2	Significant increase in credit risk since initial recognition	Lifetime-expected credit losses: The expected credit losses that result from all possible default events over the expected life of a financial instrument.
Stage 3	Credit-impaired financial assets	

(*1) A loss allowance for lifetime-expected credit losses is required for a financial instrument if the credit risk on that financial instrument has increased significantly since initial recognition. It is also required for contract assets or trade receivables that are not, according to K-IFRS 1115 *Revenue from Contracts with Customers*, considered to contain a significant financing component. Additionally, the Group can elect an accounting policy of recognizing lifetime-expected credit losses for all contract assets and/or all trade receivables, including those that contain a significant financing component or lease receivables.

(*2) If the financial instrument has low credit risk at the reporting date, the Group may assume that the credit risk has not increased significantly since initial recognition.

Under K-IFRS 1109, an entity shall only recognize the cumulative changes in lifetime-expected credit losses since initial recognition is a loss allowance for purchased or originated credit-impaired financial assets.

The Group has debt instruments amounting to ₩3,502,981 million that are measured at amortized cost as of December 31, 2017, and sets loss allowance amounting to ₩8,903 million for these assets.

D. Hedge accounting

New standard, K-IFRS 1109, retains the mechanics of hedge accounting in K-IFRS 1039 (fair value hedge, cash flow hedge, hedge of a net investment in a foreign operation). Under the new model, it is possible for an entity to reflect its risk management activities on the financial statements by focusing on principle-based hedge effectiveness assessment instead of simply complying with a rule-based approach under the K-IFRS 1039. As of December 31, 2017, the Group does not apply hedge accounting and the application of these amendments has no impact on the disclosures or the amounts recognized in the Group's consolidated financial statements.

K-IFRS 1115, *Revenue from Contracts with Customers*

The core principle under K-IFRS 1115 is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The amendments introduce a five-step approach to revenue recognition and measurement: 1) Identify the contract with a customer, 2) Identify the performance obligations in the contract, 3) Determine the transaction price, 4) Allocate the transaction price to the performance obligations in the contract and 5) Recognize revenue when (or as) the entity satisfies a performance obligation. This standard will supersede K-IFRS 1011, *Construction Contracts;* K-IFRS 1018, *Revenue;* K-IFRS 2113, *Customer Loyalty Programmes;* K-IFRS 2115, *Agreements for the Construction of Real Estate;* K-IFRS 2118, *Transfers of Assets from Customers*; and K-IFRS 2031, *Revenue-Barter Transactions Involving Advertising Services*. The amendments are effective for annual periods beginning on or after January 1, 2018.

Existing K-IFRS standards and interpretations, including K-IFRS 1018 provide revenue recognition guidance by transaction types, such as sales of goods, rendering of services, interest income, royalty income, dividend income and construction revenue; however, under new K-IFRS 1115, the five-step approach is applied for all types of contracts or agreements.

In preparation for the adoption of K-IFRS 1115, the Group conducted consultations with related departments from June to September 2017, and as of December 31, 2017, the TF team composed of external accounting firms and accounting staff. TF team analyzed the impact for the Group, if necessary, with the help of sales and IT staff. Through these processes, the Group improved its internal management processes and changed some accounting systems and implemented training.

As of December 31, 2017, the preliminary impact assessment results are subject to change based on additional information available to the Group in the future. The following are the general effects, which the Group's consolidated financial statements are affected by the K-IFRS 1115.

1) IT service

The Group provides IT services business that includes supplying hardware and software, and professional services with maintenance service to the customers.

(a) Identification of performance obligations

Application of K-IFRS 1115 (1) supply of hardware; (2) supply of software; (3) provision of software and professional services (supply of custom software); (4) provision of hardware, software and professional services (System construction); (5) provision of professional services; (6) provision of software and update services (if the update is essential to the functioning of the software); and (7) provision of maintenance services. As a result of analyzing the financial impact, the Group does not anticipate that identification of performance obligations have a significant impact on the Group's revenue.

(b) A performance obligation satisfied over period: Customized assets

The Group recognizes revenues according to the progress made based on the input costs when constructing the custom software and customized system.

According to K-IFRS 1115, the assets created by the entity, which have no alternative use for the entity, and the entitlement to enforceable rights for the portion that has been performed so far are requirements for recognizing revenues over time. The Group's custom-built software and custom-built systems are performance improvement, which create or enhance an asset that the customer controls as the asset is created or enhanced, therefore the control over assets and service is transferred over period to customer. As the Group satisfies the performance obligation over period, revenue is recognized over period.

As a result of analyzing the financial impacts for fiscal year 2017, the Group does not anticipate that performance obligations over period have a significant impact on the Group's revenue.

(c) Principal versus agent considerations

There are cases that when the Group provides hardware, software and maintenance services with the Group's products or implement other parties to provide for the customers.

As a result of analyzing the financial impacts for fiscal year 2017, the Group does not anticipate that agent's items have a significant impact on the Group's revenue.

2) Logistics BPO

The Group is engaged in a logistics BPO business that provides SCM consulting services to the customers through its own logistics execution solution.

(a) Identification of performance obligations

Applying K-IFRS 1115 identifies separate performance obligations, such as transportation and warehouse operations.

As a result of analyzing the financial impacts for fiscal year 2017, the Group does not anticipate that allocation of the transaction price to each performance obligation have a significant impact on the Group's revenue.

K-IFRS 1116, *Leases*

K-IFRS 1116 introduces a comprehensive model for the identification of lease arrangements and accountings treatments for both lessors and lessees. K-IFRS 1116 will supersede the current lease guidance, including K-IFRS 1017, Leases, and the related interpretations when it becomes effective.

K-IFRS 1116 distinguishes leases and service contracts on the basis of whether an identified asset is controlled by a customer. Distinctions of operating leases and finance leases are removed for lessee accounting, and are replaced by model where a right-of-use asset and corresponding liability have to be recognized for all leases by lessees except for short-term leases and leases of low-value assets.

The right-of-use asset is initially measured at cost and subsequently measured at cost (subject to certain exceptions), less accumulated depreciation and impairment losses, adjusted for any remeasurement of the lease liability. The lease liability is initially measured at the present value of the lease payments that are not paid at that date. Subsequently, the lease liability is adjusted for interest and lease payments, as well as the impact of lease modifications, amongst others.

Furthermore, the classification of cash flows will also be affected as operating lease payments under K-IFRS 1017 are presented as operating cash flows; whereas under the K-IFRS 1116 model, the lease payments will be split into a principal and an interest portion, which will be presented as financing and operating cash flows respectively.

In contrast to lessee accounting, K-IFRS 1116 substantially carries forward the lessor accounting requirements in K-IFRS 1017, and continues to require a lessor to classify a lease either as an operating lease or a finance lease. Furthermore, extensive disclosures are required by K-IFRS 1116.

K-IFRS 1017 does not require the recognition of any right-of-use asset or liability for future payments for these leases; instead, certain information is disclosed as operating lease commitments in Note 19. A preliminary assessment indicates that these arrangements will meet the definition of a lease under K-IFRS 1116, and hence the Group will recognize a right-of-use asset and a corresponding liability in respect of all these leases, unless they qualify for low-value or short-term leases upon the application of K-IFRS 1116. The new requirement to recognize a right-of-use asset and a related lease liability is expected to have a significant impact on the amounts recognized in the Group's consolidated financial statements and the Group is currently assessing its potential impact.

In contrast, 1) for finance leases where the Group is a lessee and 2) in cases where the Group is a lessor, the Group does not anticipate that the application of K-IFRS 1116 will have a significant impact on the amounts recognized in the Group's consolidated financial statements.

Amendments to K-IFRS 1102, *Share-Based Payment*

The amendments include: 1) when measuring the fair value of a share-based payment, the effects of vesting and non-vesting conditions on the measurement of cash-settled share-based payment should be consistent with the measurement of equity-settled share-based payment; 2) share-based payment transaction in which the Group settles the share-based payment arrangement net by withholding a specified portion of the equity instruments per statutory tax withholding requirements would be classified as equity settled in its entirety, otherwise would be classified as equity settled without the net settlement feature; and 3) when a cash-settled share-based payment changes to an equity-settled share-based payment because of modifications of the terms and conditions, the original liability recognized is derecognized and the equity-settled share-based payment is recognized at the modification-date fair value. Any difference between the carrying amount of the liability at the modification date and the amount recognized in equity at the same date would be recognized in profit and loss immediately. The amendments are effective for annual periods beginning on or after January 1, 2018.

Amendments to K-IFRS 1040, *Transfers of Investment Property*

The amendments clarify that a transfer to, or from, investment property necessitates an assessment of whether a property meets, or has ceased to meet, the definition of investment property, supported by observable evidence that a change in use has occurred. The amendments further clarify that situations other than the ones listed in K-IFRS 1040 may evidence a change in use, and that a change in use is possible for properties under construction (i.e. a change in use is not limited to completed properties). The amendments are effective for annual periods beginning on or after January 1, 2018, with earlier application permitted. Entities can apply the amendments either retrospectively (if this is possible without the use of hindsight) or prospectively.

K-IFRS 2122, *Foreign Currency Transactions and Advance Consideration*

The interpretation addresses how to determine the 'date of transaction' for the purpose of determining the exchange rate to use on initial recognition of an asset, expense or income, when consideration for that item has been paid or received in advance in a foreign currency which resulted in the recognition of a non-monetary asset or non-monetary liability (e.g., a non-refundable deposit or deferred revenue).

The interpretation specifies that the date of transaction is the date on which the entity initially recognizes the non-monetary asset on non-monetary liability arising from the payment or receipt of advance consideration. If there are multiple payments or receipts in advance, the interpretation requires an entity to determine the date of transaction for each payment or receipt of advance consideration.

The interpretation is effective for annual periods beginning on or after January 1, 2018, with earlier application permitted. Entities can apply the interpretation either retrospectively or prospectively. Specific transition provisions apply to prospective application. The Group does not anticipate that the application of the amendments in the future will have an impact on the Group's consolidated financial statements because the Group already accounts for transactions involving the payment or receipt of advance consideration in a foreign currency in a way that is consistent with the amendments.

Annual Improvements to K-IFRS 2014-2016 Cycle

The annual improvements include amendments to K-IFRS 1101 First-time Adoption and K-IFRS 1028 Investment in Associates and Joint Ventures. The amendments to K-IFRS 1028 clarify that the option for a venture capital organization and other similar entities to measure investments in associates and joint ventures at FVTPL is available separately for each associate or joint venture, and that election should be made at initial recognition of the associate or joint venture. In respect of the option for an entity that is not an investment entity (IE) to retain the fair value measurement applied by its associates and joint ventures that are IEs when applying the equity method, the amendments make a similar clarification that this choice is available for each IE associate or IE joint venture. The amendments apply retrospectively with earlier application permitted.

Both the amendments to K-IFRS 1101 and 1028 are effective for annual periods beginning on or after January 1, 2018. The Group does not anticipate that the application of the amendments in the future will have any impact on the Group's consolidated financial statements as the Group is neither a first-time adopter of K-IFRS nor a venture capital organization. Furthermore, the Group does not have any associate or joint venture that is an IE.

The application of these amendments is under consideration on the impact of the disclosure of the Group's consolidated financial statements.

(2) Basis of consolidation

The consolidated financial statements incorporate the financial statements of the Company and entities (including structured entities) controlled by the Company (and its subsidiaries). Control is achieved where the Company:

1) Has the power over the investee; 2) Is exposed or has rights to variable returns from its involvement with the investee; and 3) has the ability to use its power to affect its returns. The Group reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control listed above.

When the Group has less than a majority of the voting rights of an investee, it has power over the investee when the voting rights are sufficient to give it the practical ability to direct the activities of the investee unilaterally. The Group considers all relevant facts and circumstances in assessing whether or not the Group's voting rights in an investee are sufficient to give it power, including:

- the size of the Group's holding of voting rights relative to the size and dispersion of holdings of other vote holders;
- potential voting rights held by the Group, other vote holders or other parties;
- rights arising from other contractual arrangements; and
- any additional facts and circumstances that indicate that the Group has, or does not have, the current ability to direct the relevant activities at the time that decisions need to be made, including voting patterns at previous shareholders' meetings.

Income and expenses of subsidiaries acquired or disposed of during the year are included in the consolidated statements of comprehensive income from the date the Group gains control until the date when the Group ceases to control the subsidiary. Profit or loss and each component of other comprehensive income are attributed to the owners of the Group and to the non-controlling interests. Total comprehensive income of subsidiaries is attributed to the owners of the Group and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies in line with the Group's accounting policies.

All intragroup transactions and related assets, liabilities, income and expenses are eliminated in full on consolidation.

Changes in the Group's ownership interests in subsidiaries that do not result in the Group losing control over the subsidiaries are accounted for as equity transactions. The carrying amounts of the Group's interests and the non-controlling interests are adjusted to reflect the changes in their relative interests in the subsidiaries. Any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognized directly in equity and attributed to the owners of The Group.

When the Group loses control over a subsidiary, a gain or loss on disposal is calculated as the difference between (i) the aggregate of the fair value of the consideration received and the fair value of any retained interest and (ii) the previous carrying amount of the assets (including goodwill) and liabilities of the subsidiary and any non-controlling interests. When assets of the subsidiary are carried at revalued amounts or fair values and the related cumulative gain or loss has been recognized in other comprehensive income and accumulated in equity, the amounts previously recognized in other comprehensive income and accumulated in equity are accounted for as if the Group had directly disposed of the relevant assets (i.e., reclassified to profit or loss or transferred directly to retained earnings). The fair value of any investment retained in the former subsidiary at the date when control is lost is recognized as the fair value on initial recognition for subsequent accounting under K-IFRS 1039, *Financial Instruments: Recognition and Measurement*, or, when applicable, the cost on initial recognition of an investment in an associate or a joint venture.

(3) Business combination

Acquisitions of businesses are accounted for using the acquisition method. The consideration transferred in a business combination is measured at fair value, which is calculated as the sum of the fair values of the assets transferred by the Group, liabilities incurred by the Group to the former owners of the acquiree and the equity interests issued by the Group in exchange for control of the acquiree. Acquisition-related costs are generally recognized in profit or loss as incurred.

At the acquisition date, the identifiable assets acquired and the liabilities assumed are recognized at their fair value at the acquisition date, except that:

- deferred tax assets or liabilities and liabilities or assets related to employee benefit arrangements are recognized and measured in accordance with K-IFRS 1012, *Income Taxes*, and K-IFRS 1019, *Employee Benefits*, respectively;
- liabilities or equity instruments related to share-based payment arrangements of the acquiree or share-based payment arrangements of the Group entered into to replace share-based payment arrangements of the acquiree are measured in accordance with K-IFRS 1102, *Share-based Payment*, at the acquisition date; and
- assets (or disposal groups) that are classified as held for sale in accordance with K-IFRS 1105, *Non-current Assets Held for Sale and Discontinued Operations*, are measured in accordance with that standard.

Goodwill is measured as the excess of the sum of a) the consideration transferred, b) the amount of any non-controlling interests in the acquiree and c) the fair value of the acquirer's previously held equity interest in the acquiree (if any) over the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed.

If, after reassessment, the net of the acquisition-date amounts of the identifiable assets acquired and liabilities assumed exceeds the sum of: a) the consideration transferred, b) the amount of any non-controlling interests in the acquiree and c) the fair value of the acquirer's previously held interest in the acquiree (if any), the excess is recognized immediately in profit or loss as a bargain purchase gain.

Non-controlling interests that are present ownership interests and entitle their holders to a proportionate share of the entity's net assets in the event of liquidation may be initially measured either at fair value or at the non-controlling interests' proportionate share of the recognized amounts of the acquiree's identifiable net assets. The choice of measurement basis is made on a transaction-by-transaction basis. Other types of non-controlling interests are measured at fair value or, when applicable, on the basis specified in another K-IFRS.

When the consideration transferred by the Group in a business combination includes assets or liabilities resulting from a contingent consideration arrangement, the contingent consideration is measured at its acquisition-date fair value and included as part of the consideration transferred in a business combination. Changes in the fair value of the contingent consideration that qualify as measurement-period adjustments are adjusted retrospectively, with corresponding adjustments against goodwill. Measurement-period adjustments are adjustments that arise from additional information obtained during the 'measurement period' (which cannot exceed one year from the acquisition date) about facts and circumstances that existed at the acquisition date.

The subsequent accounting for changes in the fair value of the contingent consideration that do not qualify as measurement-period adjustments depends on how the contingent consideration is classified. Contingent consideration that is classified as equity is not remeasured at subsequent reporting dates and its subsequent settlement is accounted for within equity. Contingent consideration that is classified as an asset or a liability is remeasured at subsequent reporting dates in accordance with K-IFRS 1039, *Financial Instruments: Recognition and Measurement*, or K-IFRS 1037, *Provisions, Contingent Liabilities and Contingent Assets*, as appropriate, with the corresponding gain or loss being recognized in profit or loss.

When a business combination is achieved in stages, the Group's previously held equity interest in the acquiree is remeasured to fair value at the acquisition date and the resulting gain or loss, if any, is recognized in profit or loss. Amounts arising from interests in the acquiree prior to the acquisition date that have previously been recognized in other comprehensive income are reclassified to profit or loss where such treatment would be appropriate if that interest was disposed of.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items for which the accounting is incomplete. Those provisional amounts are adjusted during the measurement period (see above), or additional assets or liabilities are recognized, to reflect new information obtained about facts and circumstances that existed at the acquisition date that, if known, would have affected the amounts recognized at that date.

(4) Investments in associates and joint ventures

An associate is an entity over which the Group has significant influence. Significant influence is the power to participate in the financial and operating policy decisions of the investee, but is not control or joint control over those policies.

A joint venture is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control.

The results of operations and assets and liabilities of associates or joint ventures are incorporated in these consolidated financial statements using the equity method of accounting, except when the investment is classified as held for sale, in which case it is accounted for in accordance with K-IFRS 1105, *Non-current Assets Held for Sale and Discontinued Operations*. Under the equity method, an investment in an associate or a joint venture is initially recognized in the consolidated statements of financial position at cost and adjusted thereafter to recognize the Group's share of the profit or loss and other comprehensive income of the associate or joint venture.

When the Group's share of losses of an associate or a joint venture exceeds the Group's interest in that associate or joint venture (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate or joint venture), the Group discontinues recognizing its share of further losses. Additional losses are recognized only to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the associate or joint venture.

Any excess of the cost of acquisition over the Group's share of the net fair value of the identifiable assets, liabilities and contingent liabilities of an associate or a joint venture recognized at the date of acquisition is recognized as goodwill, which is included within the carrying amount of the investment. Any excess of the Group's share of the net fair value of the identifiable assets, liabilities and contingent liabilities over the cost of acquisition, after reassessment, is recognized immediately in profit or loss.

Upon disposal of an associate or a joint venture that results in the Group losing significant influence over that associate or joint venture, any retained investment is measured at fair value at that date and the fair value is regarded as its fair value on initial recognition as a financial asset in accordance with K-IFRS 1039, *Financial Instruments: Recognition and Measurement*. The difference between the previous carrying amount of the associate or joint venture attributable to the retained interest and its fair value is included in the determination of gain or loss on disposal of the associate or joint venture. In addition, the Group accounts for all amounts previously recognized in other comprehensive income in relation to that associate or joint venture on the same basis if that associate or joint venture had directly disposed of the related assets or liabilities. Therefore, if a gain or loss previously recognized in other comprehensive income by that associate or joint venture would be reclassified to profit or loss on the disposal of the related assets or liabilities, the Group reclassifies the gain or loss from equity to profit or loss (as reclassification adjustment) when it loses significant influence over that associate or joint venture.

When the Group reduces its ownership interest in an associate or a joint venture, but the Group continues to use the equity method, the Group reclassifies the proportion of the gain or loss to profit or loss that had previously been recognized in other comprehensive income relating to that reduction in ownership interest if that gain or loss would be reclassified to profit or loss on the disposal of the related assets or liabilities. In addition, the Group applies K-IFRS 1105, *Non-current Assets Held for Sale and Discontinued Operations*, to a portion of investment in an associate or a joint venture that meets the criteria to be classified as held for sale.

The requirements of K-IFRS 1039, *Financial Instruments: Recognition and Measurement* are applied to determine whether it is necessary to recognize any impairment loss with respect to the Group's investment in an associate or a joint venture. When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment in accordance with K-IFRS 1036, *Impairment of Assets*, by comparing its recoverable amount (higher of value in use or fair value, less costs to sell) with its carrying amount, and any impairment loss recognized forms part of the carrying amount of the investment.

Any reversal of that impairment loss is recognized in accordance with K-IFRS 1036, *Impairment of Assets*, to the extent that the recoverable amount of the investment subsequently increases.

The Group continues to use the equity method when an investment in an associate becomes an investment in a joint venture or an investment in a joint venture becomes an investment in an associate. There is no remeasurement to fair value upon such changes in ownership interests.

When a Group entity transacts with an associate or a joint venture of the Group, profits and losses resulting from the transactions with the associate or joint venture are recognized in the Group's consolidated financial statements only to the extent of interests in the associate or joint venture that are not related to the Group.

(5) Goodwill

Goodwill resulting from an acquisition of a business is carried at cost as established at the date of acquisition of the business, less accumulated impairment losses, if any.

For the purpose of impairment testing, goodwill is allocated to each of the Group's cash-generating units ("CGUs") (or groups of CGUs) that are expected to benefit from the synergies of the combination.

A CGU to which goodwill has been allocated is tested for impairment annually, or more frequently when there is indication that the unit may be impaired. If the recoverable amount of the CGU is less than its carrying amount, the impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit and then to the other assets of the unit on a pro rata basis based on the carrying amount of each asset in the unit. Any impairment loss for goodwill is recognized directly in profit or loss. An impairment loss recognized for goodwill is not reversed in subsequent periods.

On disposal of the relevant CGU, the attributable amount of goodwill is included in the determination of the profit or loss on disposal.

(6) Revenue recognition

Revenue is measured at the fair value of the consideration received or receivable. Revenue is reduced for estimated customer returns, rebates and other similar allowances. The Group recognizes revenue when the amount of revenue can be reliably measured; when it is probable that future economic benefits will flow to the Group; and when specific criteria have been met for each of the Group's activities, as described below.

1) Sale of goods

Revenue from the sale of goods is recognized when the Group has transferred the significant risks and rewards of ownership of the goods to the buyer.

2) Rendering of services

The Group recognizes revenue from rendering of services in proportion to the stage of completion of the transaction at the reporting date. The stage of completion is assessed based on surveys of work performed.

(a) Fixed-price contracts

If the outcome of a fixed-price contract can be estimated reliably, then contract revenue is recognized in profit or loss in proportion to the stage of completion of the contract. Contract revenue includes the initial amount agreed in the contract, plus any variations in contract work, claims and incentive payments, to the extent it is probable that they will result in revenue and can be measured reliably. The stage of completion is assessed as the rate of the accumulated contract cost of the work performed divided by estimated total contract cost.

If the outcome of a fixed-price contract cannot be estimated reliably, contract revenue is recognized only to the extent of contract costs incurred that are likely to be recoverable. If it is probable that total contract cost exceeds total revenue for a contract, an expected loss on the contract is recognized immediately in profit or loss.

(b) Maintenance contracts

Revenue from maintenance contracts is recognized ratably over the contract period.

(c) Construction contracts

Where the outcome of a construction contract can be estimated reliably, revenue and costs are recognized by reference to the stage of completion of the contract activity at the end of the reporting period, measured based on the proportion of contract costs incurred for work performed to date relative to the estimated total contract costs, except where this would not be representative of the stage of completion. Variations in contract work, claims and incentive payments are included to the extent that the amount can be measured reliably and its receipt is considered probable.

Where the outcome of a construction contract cannot be estimated reliably, contract revenue is recognized to the extent of contract costs incurred that it is probable will be recoverable. Contract costs are recognized as expenses in the period in which they are incurred.

When it is probable that total contract costs will exceed total contract revenue, the expected loss is recognized as an expense immediately.

When contract costs incurred to date, plus recognized profits, less recognized losses, exceed progress billing, the surplus is shown as amounts due from customers for contract work. For contracts where progress billings exceed contract costs incurred to date, plus recognized profits, less recognized losses, the surplus is shown as the amounts due to customers for contract work. Amounts received before the related work is performed are included in the consolidated statement of financial position, as a liability, as advances received. Amounts billed for work performed, but not yet paid by the customer, are included in the consolidated statement of financial position under trade and other receivables.

3) Dividend and interest income

Dividend income from investments is recognized when the shareholders' right to receive payment has been established (provided it is probable that the economic benefits will flow to the Group and the amount of income can be measured reliably).

Interest income from a financial asset is recognized when it is probable that the economic benefits will flow to the Group and the amount of income can be measured reliably. Interest income is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable, which is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset to that asset's net carrying amount on initial recognition.

(7) Lease

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

Assets held under finance leases are initially recognized as assets of the Group at their fair value at the inception of the lease or, if lower, at the present value of the minimum lease payments. The corresponding liability to the lessor is included in the consolidated statements of financial position as a finance lease obligation.

Lease payments are apportioned between finance expenses and reduction of the lease obligation so as to achieve a constant rate of interest on the remaining balance of the liability. Contingent rentals are recognized as expenses in the periods in which they are incurred.

Operating lease payments are recognized as an expense on a straight-line basis over the lease term, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed. Contingent rentals arising under operating leases are recognized as an expense in the period in which they are incurred.

In the event that lease incentives are received to enter into operating leases, such incentives are recognized as a liability. The aggregate benefit of incentives is recognized as a reduction of rental expense on a straight-line basis, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed.

(8) Foreign currencies

For the purpose of the consolidated financial statements, the results of operations and financial position of each Group entity are expressed in Korean won, which are the functional currency of the entity and the presentation currency for the consolidated financial statements.

In preparing the financial statements of the individual entities, transactions in currencies other than the entity's functional currency ("foreign currencies") are recognized at the rates of exchange prevailing at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Non-monetary items carried at fair value that are denominated in foreign currencies are retranslated at the rates prevailing at the date when the fair value was determined. Non-monetary items that are measured in terms of historical cost in a foreign currency are not retranslated.

Exchange differences are recognized in profit or loss in the period in which they arise, except for:

- exchange differences on foreign currency borrowings relating to assets under construction for future productive use, which are included in the cost of those assets when they are regarded as an adjustment to interest costs on those foreign currency borrowings;
- exchange differences on transactions entered into in order to hedge certain foreign currency risks; and
- exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur (therefore forming part of the net investment in the foreign operation), which are recognized initially in other comprehensive income and reclassified from equity to profit or loss on disposal or partial disposal of the net investment.

For the purpose of presenting the consolidated financial statements, the assets and liabilities of the Group's foreign operations are expressed in Korean won using exchange rates prevailing at the end of the reporting period. Income and expense items are translated at the average exchange rates for the period, unless exchange rates fluctuated significantly during that period, in which case the exchange rates at the dates of the transactions are used. Exchange differences arising, if any, are recognized in other comprehensive income and accumulated in equity (attributed to non-controlling interests as appropriate).

On the disposal of a foreign operation (i.e., a disposal of the Group's entire interest in a foreign operation, a disposal involving loss of control over a subsidiary that includes a foreign operation or a partial disposal of an interest in a joint arrangement or an associate that includes a foreign operation of which the retained interest becomes a financial asset), all of the accumulated exchange differences in respect of that operation attributable to the owners of the Group are reclassified to profit or loss. Any exchange differences that have previously been attributed to non-controlling interests are derecognized, but they are not reclassified to profit or loss.

In case of a partial disposal (i.e., no loss of control) of a subsidiary that includes a foreign operation, the proportionate share of accumulated exchange differences is reattributed to non-controlling interests in equity and is not recognized in profit or loss. For all other partial disposals (i.e., partial disposals of associates or joint arrangements that do not result in the Group's losing significant influence or joint control), the proportionate share of the accumulated exchange differences is reclassified to profit or loss.

Goodwill and fair value adjustments arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the closing rate. Exchange differences arising are recognized in other comprehensive income.

(9) Government grants

Government grants are not recognized until there is a reasonable assurance that the Group will comply with the conditions attached to them and that the grants will be received.

The benefit of a government loan at a below-market rate of interest is treated as a government grant, measured as the difference between proceeds received and the fair value of the loan based on prevailing market interest rates.

Government grants related to assets are presented in the consolidated statement of financial position by deducting the grant from the carrying amount of the asset. The related grant is recognized in profit or loss over the life of a depreciable asset as a reduced depreciation expense.

Government grants related to income are recognized in profit or loss on a systematic basis over the periods in which the Group recognizes as expenses the related costs for which the grants are intended to compensate. Government grants that are receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the Group with no future related costs are recognized in profit or loss in the period in which they become receivable.

(10) Retirement benefit costs and termination benefit

The Group concurrently operates defined contribution retirement benefit plans and defined benefit retirement benefit plans.

Contributions to defined contribution retirement benefit plans are recognized as an expense when employees have rendered service entitling them to the contributions.

For defined benefit retirement benefit plans, the cost of providing benefits is determined using the projected unit credit method, with actuarial valuations being carried out at the end of each reporting period. Remeasurement, comprising actuarial gains and losses, the effect of the changes in the asset ceiling (if applicable) and the return on plan assets (excluding interest), is reflected immediately in the consolidated statement of financial position with a charge or credit recognized in other comprehensive income in the period in which they occur. Remeasurement recognized in other comprehensive income is reflected immediately in retained earnings and will not be reclassified to profit or loss. Past service cost is recognized in profit or loss in the period of a plan amendment. Net interest is calculated by applying the discount rate at the beginning of the period to the net defined benefit liability or asset. Defined benefit costs are composed of service cost (including current service cost and past service cost, as well as gains and losses on curtailments and settlements), net interest expense (income) and remeasurement.

The Group presents the service cost and net interest expense (income) components in profit or loss and the remeasurement component in other comprehensive income. Curtailment gains and losses are accounted for as past service costs.

The retirement benefit obligation recognized in the consolidated statement of financial position represents the actual deficit or surplus in the Group's defined benefit plans. Any surplus resulting from this calculation is limited to the present value of any economic benefits available in the form of refunds from the plans or reductions in future contributions to the plans. Discretionary contributions made by employees or third parties reduce service cost upon payment of these contributions to the plan. When the formal terms of the plans specify that there will be contributions from employees or third parties, the accounting depends on whether the contributions are linked to service, as follows:

If the contributions are not linked to services (e.g., contributions are required to reduce a deficit arising from losses on plan assets or from actuarial losses), they are reflected in the remeasurement of the net defined benefit liability (asset). If contributions are linked to services, they reduce service costs. For the amount of contribution that is dependent on the number of years of service, the entity reduces service cost by attributing the contributions to periods of service using the attribution method required by K-IFRS 1019 paragraph 70 for the gross benefits. For the amount of contribution that is independent of the number of years of service, the Group reduces service cost in the period in which the related service is rendered.

(11) Taxation

Income tax expense represents the sum of the tax currently payable and deferred tax.

1) Current tax

The tax currently payable is based on taxable profit for the year. Taxable profit differs from profit as reported in the consolidated statement of comprehensive income because of items of income or expense that are taxable or deductible in other years and items that are never taxable or deductible. The Group's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the end of the reporting period.

2) Deferred tax

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the consolidated financial statement and the corresponding tax bases used in the computation of taxable profit. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences to the extent it is probable that taxable profits will be available against which those deductible temporary differences can be utilized. Such deferred tax assets and liabilities are not recognized if the temporary difference arises from goodwill or from the initial recognition (other than in a business combination) of other assets and liabilities in a transaction that affects neither the taxable profit nor the accounting profit.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries and associates, and interests in joint ventures, except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments and interests are only recognized to the extent it is probable that there will be sufficient taxable profits against which the benefits of the temporary differences can be utilized and they are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent it is no longer probable that sufficient taxable profits will be available to allow all or part of the asset to be recovered. Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset is realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Deferred tax assets and liabilities are offset if, and only if, the Group has a legally enforceable right to set off current tax assets against current tax liabilities and the deferred tax assets and liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities that intend either to settle current tax liabilities and assets on a net basis or to realize the assets and settle the liabilities simultaneously in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

For the purpose of measuring deferred tax liabilities and deferred tax assets for investment properties that are measured using the fair value model, the carrying amounts of such properties are presumed to be recovered entirely through sale, unless the presumption is rebutted. The presumption is rebutted when the investment property is depreciable and is held within a business model whose objective is to consume substantially all of the economic benefits embodied in the investment properties over time, rather than through sale.

3) Current and deferred taxes for the year

Current and deferred taxes are recognized in profit or loss, except when they relate to items that are recognized in other comprehensive income or directly in equity, in which case the current and deferred taxes are also recognized in other comprehensive income or directly in equity, respectively. Where current tax or deferred tax arises from the initial accounting for a business combination, the tax effect is included in the accounting for the business combination.

(12) Property and equipment

Property and equipment are stated at cost, less subsequent accumulated depreciation and accumulated impairment losses. The cost of an item of property and equipment is directly attributable to their purchase or construction, which includes any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. It also includes the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located.

Subsequent costs are recognized in the carrying amount of an asset or as a separate asset if it is probable that future economic benefits associated with the assets will flow into the Group and the cost of an asset can be measured reliably. Routine maintenance and repairs are expensed as incurred.

The Group does not depreciate land. Depreciation expense is computed using the straight-line method based on the estimated useful lives of the assets as follows:

	Useful lives (Years)
Buildings	20–40
Machinery and equipment	4−6
Others	4

If each part of an item of property and equipment has a cost that is significant in relation to the total cost of the item, it is depreciated separately.

The Group reviews the depreciation method, the estimated useful lives and residual values of property and equipment at the end of each reporting period. If expectations differ from previous estimates, the changes are accounted for as a change in an accounting estimate.

An item of property and equipment is derecognized upon disposal or when no future economic benefits are expected to arise from the continued use of the asset. Any gain or loss arising on derecognition of the property and equipment (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in profit or loss in the period in which the property and equipment is derecognized.

(13) Intangible assets

1) Intangible assets acquired separately

Intangible assets with finite useful lives that are acquired separately are carried at cost, less accumulated amortization and accumulated impairment losses. Amortization is recognized on a straight-line basis over their estimated useful lives. The estimated useful life and amortization method are reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis. Intangible assets with indefinite useful lives that are acquired separately are carried at cost, less accumulated impairment losses.

2) Internally generated intangible assets - research and development expenditure

Expenditure on research activities is recognized as an expense in the period in which it is incurred.

Expenditure arising from development (or from the development phase of an internal project) is recognized as an intangible asset only if the development project is designed to produce new or substantially improved products and the Group can demonstrate the technical and economic feasibility and measure reliably the resources attributable to the intangible asset during its development.

The amount initially recognized for internally generated intangible assets is the sum of the expenditure incurred from the date when the intangible asset first meets the recognition criteria. Where no internally generated intangible asset can be recognized, development expenditure is recognized in profit or loss in the period in which it is incurred. Subsequent to initial recognition, internally generated intangible assets are reported at cost, less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

3) Intangible assets acquired in a business combination

Intangible assets that are acquired in a business combination are recognized separately from goodwill, and are initially recognized at their fair value at the acquisition date (which is regarded as their cost). Subsequent to initial recognition, intangible assets acquired in a business combination are reported at cost, less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

4) Derecognition of intangible assets

An intangible asset is derecognized on disposal, or when no future economic benefits are expected from its use. Gains or losses arising from derecognition of an intangible asset, measured as the difference between the net disposal proceeds and the carrying amount of the asset, are recognized in profit or loss when the asset is derecognized.

(14) Impairment of property and equipment and intangible assets other than goodwill

At the end of each reporting period, the Group reviews the carrying amounts of its property and equipment and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). When it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the CGU to which the asset belongs. Where a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual CGUs, or otherwise, they are allocated to the smallest group of CGUs for which a reasonable and consistent allocation basis can be identified.

Intangible assets with indefinite useful lives and intangible assets not yet available for use are tested for impairment at least annually, and whenever there is an indication that the asset may be impaired.

Recoverable amount is the higher of fair value, less costs to sell, or value in use. If the recoverable amount of an asset (or a CGU) is estimated to be less than its carrying amount, the carrying amount of the asset (or the CGU) is reduced to its recoverable amount and the reduced amount is recognized in profit or loss.

Where an impairment loss subsequently reverses, the carrying amount of the asset (or a CGU) is increased to the revised estimate of its recoverable amount, so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset (or the CGU) in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

(15) Inventories

Inventories are stated at the lower of cost or net realizable value. Cost of inventories, except for those in transit, are measured using the average method and consists of the purchase price, cost of conversion and other costs incurred in bringing the inventories to their present location and condition. Net realizable value represents the estimated selling price for inventories, less all estimated costs of completion and costs necessary to make the sale.

When inventories are sold, the carrying amount of those inventories is recognized as an expense (cost of sales) in the period in which the related revenue is recognized. The amount of any write-down of inventories to net realizable value and all losses of inventories is recognized as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realizable value, is recognized as a reduction in the amount of inventories recognized as an expense in the period in which the reversal occurs.

(16) Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that the Group will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking the risks and uncertainties surrounding the obligation into account. When a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows (where the effect of the time value of money is material). The discount rate used is a pretax rate that reflects current market assessments of the time value of money and the risks specific to the liability. Where discounting is used, the increase in the provision due to the passage is recognized in profit or loss as borrowing cost.

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably.

At the end of each reporting period, the remaining provision balance is reviewed and assessed to determine if the current best estimate is being recognized. If the existence of an obligation to transfer economic benefit is no longer probable, the related provision is reversed during the period.

(17) Financial instruments

Financial assets and financial liabilities are recognized when the Group entity becomes a party to the contractual provisions of the instruments. Financial assets and financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities are added to or deducted from the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at FVTPL are recognized immediately in profit or loss.

All regular-way purchases or sales of financial assets are recognized and derecognized on a trade-date basis. Regular-way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

Financial assets are classified into the following specified categories: ‘financial assets at FVTPL,’ ‘held-to-maturity investments’, ‘available-for-sale (“AFS”) financial assets’ and ‘loans and receivables.’ The classification depends on the nature and purpose of the financial assets, and is determined at the time of initial recognition.

1) Effective interest method

The effective interest method is a method of calculating the amortized cost of a debt instrument, and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the debt instrument, or (where appropriate), a shorter period, to the net carrying amount on initial recognition.

Income is recognized on an effective interest basis for debt instruments other than those financial assets classified as at FVTPL.

2) Financial assets at FVTPL

Financial assets are classified as at FVTPL when the financial asset is a contingent consideration that may be paid by an acquirer as part of business combination to which K-IFRS 1103, *Business Combinations* applies when financial assets acquired principally for the purpose of selling in the near term and derivatives, which include embedded derivatives, that are separately accounted from the main contract and not designated as a hedging instrument are classified as held for trading.

A financial asset is classified as held for trading if:

- it has been acquired principally for the purpose of selling in the near term;
- on initial recognition, it is part of a portfolio of identified financial instruments that the Group manages together and has a recent actual pattern of short-term profit taking; or
- it is a derivative that is not designated and effective as a hedging instrument.

A financial asset other than a financial asset held for trading or contingent consideration that may be paid by an acquirer as part of a business combination to which K-IFRS 1103, *Business Combinations* applies may be designated as at FVTPL upon initial recognition if:

- such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise;
- the financial asset forms part of a group of financial assets or financial liabilities, or both, which is managed and its performance is evaluated on a fair value basis, in accordance with the Group's documented risk management or investment strategy, and information about the grouping is provided internally on that basis; or
- it forms part of a contract containing one or more embedded derivatives, and K-IFRS 1039, *Financial Instruments: Recognition and Measurement* permits the entire combined contract (asset or liability) to be designated as at FVTPL.

Financial assets at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any dividend or interest earned on the financial asset and is included in the ‘other non-operating income and expenses’ line item in the consolidated statement of comprehensive income.

3) Held-to-maturity investments

Non-derivative financial assets with fixed or determinable payments and fixed maturity dates that the Group has the positive intent and ability to hold to maturity are classified as held-to-maturity investments. Held-to-maturity investments are measured at amortized cost using the effective interest method, less any impairment, with revenue recognized on an effective-yield basis.

4) AFS financial assets

AFS financial assets are non-derivatives that are either designated as AFS or are not classified as (a) loans and receivables, (b) held-to-maturity investments or (c) financial assets at FVTPL.

They are subsequently measured at fair value at the end of each reporting period. Changes in the carrying amount of AFS monetary financial assets relating to changes in foreign currency rates (see below), interest income calculated using the effective interest method and dividends on AFS equity investments are recognized in profit or loss. Other changes in the carrying amount of AFS financial assets are recognized in other comprehensive income (as investments revaluation reserve). When the investment is disposed of or is determined to be impaired, the cumulative gain or loss previously accumulated in other comprehensive income is reclassified to profit or loss.

Dividends on AFS equity instruments are recognized in profit or loss when the Group’s right to receive the dividends is established.

The fair value of AFS monetary financial assets denominated in a foreign currency is determined in that foreign currency and translated at the spot rate prevailing at the end of the reporting period. The foreign exchange gains and losses that are recognized in profit or loss are determined based on the amortized cost of the monetary asset. Other foreign exchange gains and losses are recognized in other comprehensive income.

AFS equity investments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured and derivatives that are linked to, and must be settled by, delivery of such unquoted equity investments are measured at cost, less any identified impairment losses, at the end of each reporting period.

5) Loans and receivables

Trade receivables, loans and other receivables that have fixed or determinable payments and are not quoted in an active market are classified as 'loans and receivables'. Loans and receivables are measured at amortized cost using the effective interest method, less any impairment. Interest income is recognized by applying the effective interest rate, except for short-term receivables where the effect of discounting is immaterial.

6) Impairment of financial assets

Financial assets, other than those at FVTPL, are assessed for indicators of impairment at the end of each reporting period. Financial assets are considered to be impaired when there is objective evidence that more events have occurred after the initial recognition of the financial asset and the estimated future cash flows of the investment have been affected.

For AFS equity investments, a significant or prolonged decline in the fair value of the security below its cost is considered to be objective evidence of impairment.

For all other financial assets, objective evidence of impairment includes:

- significant financial difficulty of the issuer or counterparty,
- default or delinquency in interest or principal payments,
- it becoming probable that the borrower will enter bankruptcy or financial reorganization or
- the disappearance of an active market for that financial asset because of financial difficulties.

For certain categories of financial asset, such as trade receivables, assets that are assessed not to be impaired individually are, in addition, assessed for impairment on a collective basis. Objective evidence of impairment for a portfolio of receivables could include the Group's past experience of collecting payments and an increase in the number of delayed payments in the portfolio past the average credit period, as well as observable changes in national or local economic conditions that correlate with default on receivables.

For financial assets carried at amortized cost, the amount of the impairment loss recognized is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

For financial assets that are carried at cost, the amount of the impairment loss recognized is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the current market rate of return for a similar financial asset. Such impairment loss will not be reversed in subsequent periods.

The carrying amount of the financial asset is reduced by the impairment loss directly for all financial assets, with the exception of trade receivables where the carrying amount is reduced through the use of an allowance account. When a trade receivable is considered uncollectible, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited against the allowance account. Changes in the carrying amount of the allowance account are recognized in profit or loss.

When an AFS financial asset is considered to be impaired, cumulative gains or losses previously recognized in other comprehensive income are reclassified to profit or loss in the period.

For financial assets measured at amortized cost, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized, the previously recognized impairment loss is reversed through profit or loss to the extent that the carrying amount of the investment at the date the impairment is reversed does not exceed what the amortized cost would have been had the impairment not been recognized.

In respect of AFS equity securities, impairment losses previously recognized in profit or loss are not reversed through profit or loss. Any increase in fair value subsequent to an impairment loss is recognized in other comprehensive income. In respect of AFS debt securities, impairment losses are subsequently reversed through profit or loss if an increase in the fair value of the investment can be objectively related to an event occurring after the recognition of the impairment loss.

7) Derecognition of financial assets

The Group derecognizes a financial asset only when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity. If the Group neither transfers nor retains substantially all the risks and rewards of ownership and continues to control the transferred asset, the Group recognizes its retained interest in the asset and an associated liability for amounts it may have to pay. If the Group retains substantially all the risks and rewards of ownership of a transferred financial asset, the Group continues to recognize the financial asset and also recognize a collateralized borrowing for the proceeds received.

On derecognition of a financial asset in its entirety, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognized in other comprehensive income and accumulated in equity is recognized in profit or loss.

On derecognition of a financial assets other than in its entirety (e.g., when the Group retains an option to repurchase part of a transferred asset or it retains a residual interest and such a retained interest indicates that the transferor has neither transferred nor retained substantially all the risks and rewards of ownership and has retained control of the transferred asset), the Group allocates the previous carrying amount of the financial asset between the part it continues to recognize under continuing involvement and the part it no longer recognizes on the basis of the relative fair value of those parts on the date of the transfer. The difference between the carrying amount allocated to the part that is no longer recognized and the sum of the consideration received for the part that is no longer recognized and any cumulative gain or loss allocated to it that had been recognized in other comprehensive income is recognized in profit or loss. A cumulative gain or loss that had been recognized in other comprehensive income is allocated between the part that continues to be recognized and the part that is no longer recognized on the basis of the relative fair value of those parts.

(18) Financial liabilities and equity instruments

1) Classification as debt or equity

Debt and equity instruments are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangement and the definitions of financial liability and an equity instrument.

2) Equity instruments

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued by the Group are recognized as the proceeds are received, net of direct issue costs.

Repurchase of the Group's own equity instruments is recognized and deducted directly in equity. No gain or loss is recognized in profit or loss on the purchase, sale, issue or cancellation of the Group's own equity instruments.

3) Financial liabilities

Financial liabilities are recognized when the Group becomes a party to the contractual provisions of the instruments. Financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the issue of financial liabilities are deducted from the fair value of the financial liabilities on initial recognition. Transaction cost directly attributable to acquisition of financial liabilities at FVTPL is recognized immediately in profit or loss.

Financial liabilities are classified as either financial liabilities at FVTPL or other financial liabilities.

4) Financial liabilities at FVTPL

Financial liabilities are classified as at FVTPL when the financial liability is a contingent consideration that may be paid by an acquirer as part of a business combination to which K-IFRS 1103, *Business Combinations* applies, held for trading or it is designated as at FVTPL.

A financial liability is classified as held for trading if:

- it has been acquired principally for the purpose of repurchasing in the near term;
- on initial recognition, it is part of a portfolio of identified financial instruments that the Group manages together and has a recent actual pattern of short-term profit taking; or
- it is a derivative that is not designated and effective as a hedging instrument.

A financial liability other than a financial liability held for trading or contingent consideration that may be paid by an acquirer as part of a business combination may be designated as at FVTPL upon initial recognition if:

- such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise;
- the financial liability forms part of a group of financial assets or financial liabilities, or both, which is managed, and its performance is evaluated on a fair value basis, in accordance with the Group's documented risk management or investment strategy, and information about the grouping is provided internally on that basis; or
- it forms part of a contract containing one or more embedded derivatives, and K-IFRS 1039, *Financial Instruments*: *Recognition and Measurement,* permits the entire combined contract (asset or liability) to be designated as at FVTPL.

Financial liabilities at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any interest paid on the financial liability and is included in the 'other non-operating income and expenses' line item in the consolidated statement of comprehensive income.

5) Other financial liabilities

Other financial liabilities are subsequently measured at amortized cost using the effective interest method, with interest expense recognized on an effective-yield basis.

The effective interest method is a method of calculating the amortized cost of a financial liability, and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments, including all fees and points paid or received (that form an integral part of the effective interest rate) and transaction costs and other premiums or discounts through the expected life of the financial liability, or (where appropriate) a shorter period, to the net carrying amount on initial recognition.

6) Financial guarantee contracts

A financial guarantee contract is a contract that requires the issuer to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payments when due in accordance with the terms of a debt instrument.

Financial guarantee contract liabilities are initially measured at their fair values and, if not designated as at FVTPL, are subsequently measured at the higher of:

- the amount of the obligation under the contract, as determined in accordance with K-IFRS 1037, *Provisions, Contingent Liabilities and Contingent Assets*, and
- the amount initially recognized, less cumulative amortization recognized, in accordance with the K-IFRS 1018, *Revenue.*

7) Derecognition of financial liabilities

The Group derecognizes financial liabilities when the Group's obligations are discharged, canceled or expired. The difference between the carrying amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

(19) Fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, regardless of whether that price is directly observable or estimated using another valuation technique. In estimating the fair value of an asset or a liability, the Group takes the characteristics of the asset or liability into account if market participants would take those characteristics into account when pricing the asset or liability at the measurement date. Fair value for measurement and/or disclosure purposes in these consolidated financial statements is determined on such a basis, except for share-based payment transactions that are within the scope of K-IFRS 1102, *Share-based Payment*; leasing transactions that are within the scope of K-IFRS 1017, *Leases*; and measurements that have some similarities to fair value, but are not fair value, such as net realisable value in K-IFRS 1002, *Inventories,* or value in use in K-IFRS 1036, *Impairment of Assets*.

In addition, for financial reporting purposes, fair value measurements are categorized into Level 1, 2 or 3 based on the degree to which the inputs to the fair value measurements are observable and the significance of the inputs to the fair value measurement in its entirety, which are described as follows:

- Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the Group can access at the measurement date;
- Level 2 inputs are inputs, other than quoted prices included within Level 1, that are observable for the asset or liability, either directly or indirectly; and
- Level 3 inputs are unobservable inputs for the asset or liability.

(20) Accounting treatment related to the emission rights cap and trade scheme

The Group classifies the emission rights as intangible assets. Emission rights allowances that the government allocated free of charge are measured at ₩0, and emission rights allowances purchased, which the Group paid to purchase the allowances, are measured at cost. If emission rights the government allocated free of charge are sufficient to settle the emission rights allowances allotted for vintage year, the emissions liabilities are measured at ₩0. However, for the emissions liabilities that exceed the allowances allocated free of charge, the shortfall is measured at the best estimate at the end of the reporting period.

3. CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY:

In the application of the Group's accounting policies, which are described in Note 2, management is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised if the revision affects only that period or in the period of revision and future periods if the revision affects both current and future periods.

The following are the key assumptions concerning the future, and other key sources of estimation uncertainty at the end of the reporting period, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year:

(1) Revenue recognition

Revenue from project services is recognized using the percentage-of-completion method, which is recognized based on the costs incurred to date as a percentage to the total estimated costs to be incurred.

(2) Provision for repairs

The Group estimates the related provision for repairs based on historical experience.

(3) Impairment of goodwill

Determining whether goodwill is impaired requires an estimation of the value in use of the CGUs to which goodwill has been allocated.

(4) Reserve for project losses

The Group accrues reserve for project losses based on expected amount of project losses.

(5) Net defined benefit liabilities

The present value of net defined benefit liability depends on a number of factors that are determined on an actuarial basis using a number of assumptions, including the discount rate and salary growth.

(6) Uncertainty on the Estimation of Earnings Accumulation Tax (“EAT”)

Under the EAT regime, the Group may incur increased tax burden depending on its level of investment, payroll increase or cash dividends for the preceding three years from 2015. There is uncertainty in the estimation of the tax impact to the Group, which is reviewed by the management per the current level of investment, payroll increase or cash dividends.

4. SEGMENT REPORTING:

(1) Basis for segmentation

The Group is composed of an IT service division and Logistics Business Process Outsourcing (“BPO”) division, which are strategic business units of the Group. These divisions offer different goods and services and are managed separately because each division requires different technologies and marketing strategies.

The following summary describes the operations of each operating segment:

	Main business
IT service	Reportable segment for IT consulting, IT system design and development SI, clients’ information system operation and maintenance, data centers and network service.
Logistics BPO	Reportable segment for global logistics IT services, such as supply chain and logistics consulting and solutions.

(2) Financial information for each segment

Financial information for each segment for the years ended December 31, 2017 and 2016, is as below. The accounting policies applied to each reportable segment are the same as the significant accounting policies described in Note 2. Management determines resources to be allocated to each division and reviews based on operating income of each division in order to evaluate performance.

The Group CEO evaluates segment assets based on property and equipment and intangible assets. Segment liabilities are not reported to the Group CEO and, therefore, are not disclosed.

1) Segment information

<December 31, 2017>

	Korean won (in thousands)				
	Logistics BPO	IT service	Total	Adjustments	Adjusted amounts
Revenue	₩ 4,323,676,660	₩ 6,052,418,562	₩ 10,376,095,222	₩ (1,076,889,092)	₩ 9,299,206,130
Internal revenue	154,096,983	(1,230,986,075)	(1,076,889,092)	1,076,889,092	-
External revenue	4,169,579,677	5,129,626,453	9,299,206,130	-	9,299,206,130
Depreciation	4,958,406	210,523,102	215,481,508	(1,754,389)	213,727,119
Amortization	6,248,239	109,682,443	115,930,682	3,020,273	118,950,955
Operating income	72,505,160	655,518,553	728,023,713	3,535,436	731,559,149
Segments asset	27,270,371	1,936,146,956	1,963,417,327	-	1,963,417,327
Acquisition of non-current assets	12,555,091	239,082,543	251,637,634	(21,920,591)	229,717,043

<December 31, 2016>

	Korean won (in thousands)				
	Logistics BPO	IT service	Total	Adjustments	Adjusted amounts
Revenue	₩ 3,542,173,208	₩ 5,531,833,086	₩ 9,074,006,294	₩ (893,819,433)	₩ 8,180,186,861
Internal revenue	(103,760,971)	(790,058,462)	(893,819,433)	893,819,433	-
External revenue	3,438,412,237	4,741,774,624	8,180,186,861	-	8,180,186,861
Depreciation	3,055,751	233,902,445	236,958,196	(1,032,556)	235,925,640
Amortization	13,138,711	113,177,575	126,316,286	2,664,734	128,981,020
Operating income	173,474,887	448,745,948	622,220,835	4,871,460	627,092,295
Segments assets	27,875,961	2,065,472,948	2,093,348,909	-	2,093,348,909
Acquisition of non-current assets	8,465,102	268,309,451	276,774,553	-	276,774,553

2) Information on geographical areas

The Group's revenue (based on location) by region is as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Revenue:		
Domestic	₩ 4,389,918,546	₩ 3,860,932,674
America	1,628,550,148	1,525,452,317
Europe	817,354,821	602,538,057
Asia and Africa (*1)	1,552,741,271	1,374,045,546
China	910,641,344	817,218,267
Total	₩ 9,299,206,130	₩ 8,180,186,861

(*1) Korea and China are excluded.

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Non-current asset: (*1)		
Domestic	₩ 1,894,777,714	₩ 2,010,094,728
America	41,690,089	48,046,246
Europe	10,065,777	11,604,617
Asia and Africa (*2)	8,661,761	8,552,361
China	8,221,986	15,050,957
Total	₩ 1,963,417,327	₩ 2,093,348,909

(*1) Financial instruments, investments in associates, deferred tax assets and long-term prepaid expenses are not included.

(*2) Korea and China are excluded.

3) Revenues generated from external customer of Samsung Electronics Co., Ltd. and its subsidiaries account for more than 10% of the Group's consolidated revenue, amounting to ₩6,836,142 million and ₩6,037,970 million for the years ended December 31, 2017 and 2016, respectively.

5. CASH AND CASH EQUIVALENTS:

Cash and cash equivalents as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Cash	₩ 4,737	₩ 4,820
Demand deposits	931,456,656	1,190,222,639
Total	₩ 931,461,393	₩ 1,190,227,459

6. FINANCIAL INSTRUMENTS RESTRICTED AND PLEDGED AS COLLATERAL:

Details of restricted financial instruments and those pledged as collateral as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Short-term financial instruments:		
Deposit related to national project	₩ 45,248	₩ 8,135
Long-term financial instruments:		
Deposits for checking account	17,000	21,500
Deposits for sub-contractors (*1)	18,300,000	18,300,000
Others (*2)	15,000	15,000
Total	₩ 18,377,248	₩ 18,344,635

(*1) Deposits restricted in use for financially supporting the Group's sub-contractors in agreement with Industrial Bank of Korea.

(*2) Others are subject to withdrawal restrictions in relation to guarantees provided by Seoul Guarantee Insurance Company.

7. CATEGORIES OF FINANCIAL INSTRUMENTS:

(1) Details of categories of financial instruments as of December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)				
	Cash and cash equivalents	Loans and receivables	AFS financial assets	Total	Fair value
Financial assets:					
Cash and cash equivalents	₩ 931,461,393	₩ -	₩ -	₩ 931,461,393	₩ 931,461,393
Short-term financial instruments	-	1,993,797,925	-	1,993,797,925	1,993,797,925
AFS financial assets (*1)	-	-	12,651,780	12,651,780	12,651,780
Trade receivables, other receivables and other assets (*2)	-	1,399,634,175	-	1,399,634,175	1,399,634,175
Others (*3)	-	109,548,960	-	109,548,960	109,548,960
Total	₩ 931,461,393	₩ 3,502,981,060	₩ 12,651,780	₩ 4,447,094,233	₩ 4,447,094,233

(*1) Equity instruments that do not have a quoted price in an active market and fair values cannot be measured reliably are measured at cost and excluded from the fair-value disclosures.

(*2) Other assets, such as short-term loans receivable and long-term loans receivable, are included.

(*3) Others, such as accrued income, deposits received for guarantees, long-term financial instruments and deposits provided, are included.

	Korean won (in thousands)	
	Financial liabilities measured at amortized cost	Fair value
Financial liabilities:		
Trade and other payables	₩ 511,045,515	₩ 511,045,515
Accrued expense	461,893,139	461,893,139
Borrowings and corporate bonds	830,296	830,296
Others (*1)	5,828,950	5,828,950
Total	₩ 979,597,900	₩ 979,597,900

(*1) Others, such as accrued dividends, deposits received and long-term deposits received, are included.

<December 31, 2016>

	Korean won (in thousands)				
	Cash and cash equivalents	Loans and receivables	AFS financial assets	Total	Fair value
Financial assets:					
Cash and cash equivalents	₩ 1,190,227,459	₩ -	₩ -	₩ 1,190,227,459	₩ 1,190,227,459
Short-term financial instruments	-	1,265,550,668	-	1,265,550,668	1,265,550,668
AFS financial assets (*1)	-	-	7,465,313	7,465,313	7,465,313
Trade receivables, other receivables and other assets (*2)	-	1,237,536,646	-	1,237,536,646	1,237,536,646
Others (*3)	-	111,630,403	-	111,630,403	111,630,403
Total	₩ 1,190,227,459	₩ 2,614,717,717	₩ 7,465,313	₩ 3,812,410,489	₩ 3,812,410,489

(*1) Equity instruments that do not have a quoted price in an active market and fair values cannot be measured reliably are measured at cost and excluded from the fair value disclosures.

(*2) Other assets, such as short-term loans receivable and long-term loans receivable, are included.

(*3) Others, such as accrued income, deposits received for guarantees, long-term financial instruments and deposits provided, are included.

	Korean won (in thousands)	
	Financial liabilities measured at amortized cost	Fair value
Financial liabilities:		
Trade and other payables	₩ 490,806,908	₩ 490,806,908
Accrued expense	497,977,208	497,977,208
Borrowings and corporate bonds	6,698,215	6,698,215
Others (*1)	10,609,474	10,609,474
Total	₩ 1,006,091,805	₩ 1,006,091,805

(*1) Others, such as accrued dividends and deposits received, are included.

(2) Gain or loss on financial instruments by category

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Loans and receivables:		
Interest income (*1)	₩ 42,723,967	₩ 31,559,322
Reversal of bad debt expense (bad debt expenses)	(4,541,903)	540,163
AFS financial assets:		
Gain (loss) on valuation (OCI)	2,896,088	(7,888)
Dividend income	18,175	10,450
Loss on disposal	(20,339)	(81,919)
Financial liabilities measured at amortized cost:		
Interest expenses	(1,900,957)	(1,352,329)
Net foreign exchange loss	(3,894,511)	(5,482,150)
Net gain(loss) on foreign currency transaction	(22,818,023)	26,239,430

(*1) Interest income includes interest income generated by cash and cash equivalents.

8. FAIR VALUE OF FINANCIAL INSTRUMENTS:

There are no significant changes in the business and economic environment that would impact the fair value of financial assets and liabilities for the year ended December 31, 2017.

(1) Financial instruments measured at cost

Details of financial instruments measured at cost as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
AFS financial assets:		
Unlisted equity securities	₩ 3,044,247	₩ 4,189,139
Equity investments and others	2,304,774	2,304,774
Total	₩ 5,349,021	₩ 6,493,913

Some of the unlisted equity securities and investments are measured at cost because the variability of estimated cash flows is significant and the probabilities of the various estimates cannot be reliably assessed. The Group has no intention to dispose of the aforementioned equity securities and investments, which will be measured at fair value when the fair values can be reliably measured.

(2) Fair value hierarchy

The Group classifies the financial instruments measured at fair value on the consolidated statement of financial position into the following three levels (fair value hierarchy) based on the inputs to valuation techniques used to measure fair value:

- Level 1: Inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the Group can access at the measurement date;
- Level 2: Inputs are inputs, other than quoted prices included within Level 1, that are observable for the asset or liability, either directly (for example, price) or indirectly (for example, derived from price); and
- Level 3: Inputs are inputs for the asset or liability that are not based on observable market data (unobservable inputs).

Fair value hierarchy of financial instruments subsequently measured at fair value as of December 31, 2017 and 2016, is as follows:

	Korean won (in thousands)			
December 31, 2017	Level 1	Level 2	Level 3	Total
AFS financial assets	₩ -	₩ 5,839,959	₩ 1,462,800	₩ 7,302,759

	Korean won (in thousands)			
December 31, 2016	Level 1	Level 2	Level 3	Total
AFS financial assets	₩ -	₩ -	₩ 971,400	₩ 971,400

The above fair values are measured on a recurring basis. The fair value of financial instruments that are not traded in an active market is determined using valuation methods. These valuation techniques maximize the use of observable market data where they are available and rely as little as possible on entity-specific estimates. If all significant inputs required to measure the fair value of an instrument are observable, the instrument is included in Level 2. There was no significant movement between Level 1 and Level 2 for the year ended December 31, 2017.

If one or more significant inputs are not based on observable market data, the financial instruments are included in Level 3. The fair value of the financial instruments in Level 3 was estimated using the discounted cash flow model.

(3) Changes in financial instruments categorized (AFS financial assets) in Level 3

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Beginning balance	₩ 971,400	₩ 993,000
Profit or loss recognized in OCI	491,400	(21,600)
Ending balance	₩ 1,462,800	₩ 971,400

(4) Valuation methods and inputs

Valuation techniques and inputs used in the recurring fair value measurements of the long-term AFS financial assets categorized within Level 3 of the fair value hierarchy as of December 31, 2017, are as follows:

	Korean won (in thousands)				
	Fair value	Level	Valuation method	Inputs	Range of inputs (weighted average)
CVnet Co., Ltd.	₩ 1,462,800	3	Discounted cash flow	Sales growth rate	2.2%–3.1% (2.59%)
				Pretax discount rate	14.20%

(5) Sensitivity analysis for recurring fair value measurements categorized in Level 3

Sensitivity analysis of financial instruments is performed to measure favorable and unfavorable changes in the fair value of financial instruments that are affected by the unobservable input parameters, using statistical techniques. Financial instruments categorized in Level 3 and subject to sensitivity analysis are equity securities for which changes in the fair value are recognized in OCI.

The sensitivity analysis of OCI in accordance with the variation of the input parameters for the equity securities are as follows:

	Korean won (in thousands)	
	Favorable changes	Unfavorable changes
AFS financial assets (*1)	₩ 31,800	₩ (27,600)

(*1) Changes in their fair value are calculated as favorable changes and unfavorable changes based on the changes in discount rate that is a significant unobservable input. Favorable changes are the changes by decreasing discount rate by 1.0%. Unfavorable changes are the changes by increasing discount rate by 1.0%.

9. TRADE, NON-TRADE AND OTHER RECEIVABLES:

(1) Details of trade receivables, other receivables and others as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)					
	December 31, 2017			December 31, 2016		
	Trade receivables	Other receivables	Others	Trade receivables	Other receivables	Others
Receivables, gross	₩1,214,391,408	₩ 754,318,073	₩ 5,578,620	₩1,050,919,864	₩ 830,185,647	₩ 7,322,456
Allowances for bad debts	(4,596,504)	(1,971,071)	(2,335,817)	(4,807,501)	(1,974,827)	(3,297,837)
Receivables, net	₩1,209,794,904	₩ 752,347,002	₩ 3,242,803	₩1,046,112,363	₩ 828,210,820	₩ 4,024,619

(2) Changes in allowance for doubtful accounts of trade and other receivables for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)					
	December 31, 2017			December 31, 2016		
	Trade receivables	Other receivables	Others	Trade receivables	Other receivables	Others
Beginning balance	₩ 4,807,501	₩ 1,974,827	₩ 3,297,837	₩ 5,302,183	₩ 2,175,842	₩ 3,181,601
(Reversal of) bad debt expense	3,833,684	(5,055)	106,370	412,155	(200,331)	116,236
Receivables written off	(3,356,736)	-	(1,068,390)	(207,925)	-	-
Collection of receivables written off	1,826	2,886	-	3,167	130	-
Others	(689,771)	(1,587)	-	(702,079)	(814)	-
Ending balance	₩ 4,596,504	₩ 1,971,071	₩ 2,335,817	₩ 4,807,501	₩ 1,974,827	₩ 3,297,837

The recognition of allowances for doubt accounts has been included in selling and administrative expenses and other income in the consolidated statements of comprehensive income (Notes 25 and 26).

(3) The aging analysis of trade receivables, other receivables and others overdue, but not individually impaired as of December 31, 2017 and 2016, is as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Up to 1 month	₩ 130,363,271	₩ 193,455,324
1 month to 6 months	68,133,897	66,683,040
7 to 12 months	26,058,574	12,457,331
Over 12 months	5,970,249	14,860,629
Total	₩ 230,525,991	₩ 287,456,324

(4) Details of the Group's individually impaired receivables as of December 31, 2017 and 2016, are as follows:

	Korean won (In millions)	
	December 31, 2017	December 31, 2016
Individually impaired receivables	₩ 8,380	₩ 9,503

The individually impaired receivables are generally aged more than one year and the debtors are experiencing significant financial difficulty. The Group recorded an additional allowance of ₩523 million and ₩577 million as of December 31, 2017 and 2016, respectively, using historical experience rates based on aging analysis of receivables.

(5) The maximum exposure to credit risk as of December 31, 2017, is the carrying value of each class of receivables.

10. INVENTORIES:

(1) Details of the Group's inventories as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Raw materials	₩ 7,488,650	₩ 2,930,645
Merchandise	15,225,336	10,372,816
Goods in transit	187,677	975,537
Supplies	1,855,044	1,947,065
Consigned goods	3,548	-
Total	₩ 24,760,255	₩ 16,226,063

(2) The amount of inventories recognized as expense (cost of sales) and valuation losses on inventories reflected in cost of sales for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Inventories recognized as expenses (cost of sales)	₩ 552,502,943	₩ 406,840,784
Inventory write-downs	713,107	1,766,197
Reversals of inventory write-downs	(928,790)	(576,942)

11. LONG-TERM AFS FINANCIAL ASSETS:

(1) Changes in long-term AFS financial assets (excluding investments in associates) for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Beginning balance	₩ 7,465,313	₩ 3,646,857
Acquisition and transfer	2,313,600	3,935,238
Disposals	(23,221)	(108,893)
Valuation	2,896,088	(21,600)
Reclassification of valuation	-	13,711
Ending balance	₩ 12,651,780	₩ 7,465,313

(2) Details of long-term AFS financial assets (excluding investments in associates) as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
	Acquisition cost	Book value	Acquisition cost	Book value
Unlisted securities	₩ 37,520,900	₩ 10,347,006	₩ 35,207,300	₩ 5,160,539
Others	2,304,774	2,304,774	2,304,774	2,304,774
Total	₩ 39,825,674	₩ 12,651,780	₩ 37,512,074	₩ 7,465,313

The Group measures long-term AFS financial assets at the fair value, except for some of unlisted securities and others that are measured at cost as there are no quoted market prices in an active market and fair value cannot be reliably measured.

1) Listed securities (excluding investments in associates)

The Group does not have listed securities (excluding investments in associates) as of December 31, 2017 and 2016.

2) Unlisted securities (excluding investments in associates)

Details of unlisted securities (excluding investments in associates) as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)				
	December 31, 2017				December 31, 2016
	Number of shares owned	Percentage of ownership (%)	Acquisition cost	Book value	Book value
Dream Hub PFV Co., Ltd. (*1)	6,000,000	3.00	₩ 30,000,000	₩ -	₩ -
CVnet Co., Ltd. (*2)	600,000	9.38	749,400	1,462,800	971,400
Others (*3)	-	-	6,771,500	8,884,206	4,189,139
Total			₩ 37,520,900	₩ 10,347,006	₩ 5,160,539

(*1) Investment in Dream Hub PFV Co., Ltd. was measured using the net asset value method as of December 31, 2013, and ₩30,000 million of differences from the carrying amount were recognized as impairment losses.

(*2) The fair value of CVnet Co., Ltd. was appropriately estimated based on the professional judgment of independent appraisers' reasonable valuation method. The fair value was estimated using the discounted cash flow method by the independent appraisers. In estimating future cash flows, economic indicators and conditions were taken into consideration and it was presumed that there were no significant changes in the business structure of the investee.

(*3) The fair values of unlisted equity securities, except for CVnet Co., Ltd., could not be reliably estimated due to the lack of financial information. Accordingly, these securities were presented at their acquisition cost or acquisition cost, less accumulated impairment losses.

Except for the differences recognized as impairment losses, differences between acquisition cost and market price are recognized as other components of equity (valuation gain (loss) on AFS financial assets) after considering income tax effect recorded directly in equity.

(3) Changes in valuation gain (loss) in the above long-term AFS financial assets in accordance with fair value assessment for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Beginning balance	₩ 308,240	₩ 316,128
Measurement of fair value	2,872,042	(21,600)
Included in profit or loss	-	13,712
Ending balance	3,180,282	308,240
Income tax effect	(767,662)	(49,086)
Total	₩ 2,412,620	₩ 259,154

12. SUBSIDIARIES:

(1) Subsidiaries as of December 31, 2017, are as follows:

Region	Name of subsidiaries	Type of business	Number of stocks owned by: Controlling company	Subsidiary	Total	Ownership (%)	Country	Shares held by subsidiaries (%)
Korea	S-Core Co., Ltd.	Operating system software development	21,347,538	140,912	21,488,450	82.22	Korea	0.54
	Open Hands Co., Ltd.	Software development	20,000	-	20,000	100.00	Korea	-
	Miracom Inc.	System integration service	5,010,297	-	5,010,297	83.62	Korea	-
	MultiCampus Co., Ltd. (*1)	Providing remote education system and contents	2,800,000	-	2,800,000	47.24	Korea	-
	SVIC #31 Investment Partnership	Venture capital	69	-	69	99.00	Korea	-
	SECUi Corp.	System software development and supply	6,500,000	-	6,500,000	56.52	Korea	-
America	Samsung SDS Global SCL America, Inc.	Logistics	5,500,000	-	5,500,000	100.00	America	-
	Samsung SDS Latin Americas Solucoes Em Tecnologia Ltda	System integration service	224,218,200	607,637	224,825,837	100.00	Brazil	0.27
	Samsung SDS Mexico, S.A. de C.V.	System integration service and logistics	-	99	99	99.00	Mexico	99.00
	Language Testing International, Inc. (*1)	Oral proficiency interview computer assessment service	-	115,980	115,980	38.91	America	82.36
	Samsung SDS Global SCL Panama S.A.	Logistics	-	9,999	9,999	99.99	Panama	99.99
	Samsung SDS Global SCL Chile Limitada	Logistics	-	-	-	99.99	Chile	99.99
	Samsung SDS Global SCL Colombia S.A.S.	Logistics	-	10,000	10,000	100.00	Colombia	100.00
	Samsung SDS Global SCL Peru S.A.C.	Logistics	-	9,999	9,999	99.99	Peru	99.99
	Samsung SDS GSCL Canada., Ltd.	Logistics	10,000	-	10,000	100.00	Canada	-
	Samsung SDS Global SCL Latin America Logistica Ltda	Logistics	5,887,266,647	15,954,652	5,903,221,299	100.00	Brazil	0.27
	Samsung SDS America, Inc.	System integration service	-	-	-	100.00	America	-
	Neo EXpress Transportation (NEXT), Inc.	Logistics	449,339	-	449,339	51.00	America	-
Europe	Samsung SDS Europe, Ltd.	System integration service	1,000,000	-	1,000,000	100.00	England	-
	Samsung SDS Global SCL Netherlands Cooperatief U.A.	Logistics	-	-	-	100.00	Netherlands	0.01
	Samsung SDS Global SCL Rus Limited Liability Company	Logistics	-	-	-	100.00	Russia	0.01
	Samsung SDS Global SCL Hungary Kft.	Logistics	-	-	-	100.00	Hungary	-
	Samsung SDS Global SCL Slovakia, S.R.O.	Logistics	-	-	-	100.00	Slovakia	-
	Samsung SDS Global SCL Poland Sp. Z.o.o.	Logistics	9,999	1	10,000	100.00	Poland	0.01
	Samsung SDS Global SCL UK Limited	Logistics	100,000	-	100,000	100.00	England	-
	Samsung GSCL Sweden AB	Logistics	5,800,000	-	5,800,000	100.00	Sweden	-
	Samsung SDS Global SCL France SAS	Logistics	150,000	-	150,000	100.00	France	-
	Samsung SDS Global SCL Baltics, SIA	Logistics	16,000	-	16,000	100.00	Latvia	-
	Samsung SDS Global SCL Italy S.R.L. A Socio Unico	Logistics	100,000	-	100,000	100.00	Italy	-
	Samsung SDS Global Supply Chain Logistics Spain S.L.U.	Logistics	56,000	-	56,000	100.00	Spain	-
	Samsung GSCL Portugal, Sociedade Unipessoal LDA	Logistics	16,000	-	16,000	100.00	Portugal	-
	Samsung SDS Global SCL Greece Societe Anonyme	Logistics	19,998	2	20,000	100.00	Greece	0.01
	Samsung SDS Global SCL Germany GmbH	Logistics	-	-	-	100.00	Germany	-
	Samsung SDS Global SCL Austria GmbH	Logistics	-	-	-	100.00	Austria	-
	Samsung SDS Global SCL Czech S.R.O.	Logistics	-	-	-	100.00	Czech	-
	Samsung SDS Global SCL Switzerland GMBH	Logistics	2,000	-	2,000	100.00	Switzerland	-
	Samsung SDS GSCL Romania S.R.L.	Logistics	9,999	1	10,000	100.00	Romania	0.01
Asia	Samsung SDS China Co., Ltd.	System integration service	-	-	-	100.00	China	-
	Samsung IT Services (Beijing) Co., Ltd.	System integration service	-	-	-	100.00	China	-
	Samsung SDS Asia Pacific Pte. Ltd.	System integration service	1,000,000	-	1,000,000	100.00	Singapore	-
	Samsung SDS Global SCL Asia Pacific Pte. Ltd.	Logistics	1,470,000	-	1,470,000	100.00	Singapore	-
	Samsung SDS Vietnam Co., Ltd.	System integration service	-	-	-	100.00	Vietnam	-
	Samsung SDS GSCL Vietnam Co., Ltd.	Logistics	-	-	-	100.00	Vietnam	-
	ALS SDS JOINT STOCK COMPANY	Logistics	739,500	-	739,500	51.00	Vietnam	-

Region	Name of subsidiaries	Type of business	Number of stocks owned by: Controlling company	Subsidiary	Total	Ownership (%)	Country	Shares held by subsidiaries (%)
Asia	Samsung SDS Global SCL Philippines Co., Ltd. Inc.	Logistics	20,999,995	-	20,999,995	99.99	Philippines	-
	Samsung SDS Global SCL Thailand Co., Ltd.	Logistics	879,988	-	879,988	99.99	Thailand	-
	SDS - Acutech Co., Ltd. (*1)	Logistics	109,999	-	109,999	49.99	Thailand	-
	Samsung SDS Global SCL Malaysia SDN BHD	Logistics	2,099,998	-	2,099,998	99.99	Malaysia	-
	PT. Samsung SDS Global SCL Indonesia (*2)	Logistics	245	-	245	49.00	Indonesia	-
	Samsung SDS Global SCL Hong Kong Co., Ltd.	Logistics	11,691,380	-	11,691,380	100.00	Hong Kong	-
	Samsung Data Systems India Private Limited	Logistics	2,999,999	-	2,999,999	99.99	India	-
	Samsung SDS India Private Limited	System integration service	2,999,999	-	2,999,999	99.99	India	-
	Samsung SDS Global SCL Beijing Co., Ltd.	Logistics	-	-	-	100.00	China	100.00
	Miracom Inc. Asia Pacific Ltd.	System integration service	-	5,864,162	5,864,162	83.62	Hong Kong	100.00
	Miracom Inc. China Ltd.	System integration service	-	-	-	83.62	China	100.00
	Samsung SDS Global Development Center Xi'an	System integration service	-	-	-	100.00	China	100.00
	Samsung SDS Global SCL Australia PTY LTD.	Logistics	1,000	-	1,000	100.00	Australia	-
	SDS Kerry (Shanghai) Supply Chain Solutions Limited (*1)	Logistics	-	-	-	50.00	China	-
Africa	Samsung SDS Global SCL Egypt	Logistics	9,999	-	9,999	99.99	Egypt	-
	Samsung SDS Global SCL South Africa (PTY) LTD.	Logistics	100	-	100	100.00	South Africa	-
Middle east	Samsung SDS Global SCL Nakliyat ve Lojistik Anonim Sirketi	Logistics	1,000	-	1,000	100.00	Turkey	-
	Samsung SDS Global SUPPLY CHAIN LOGISTICS MIDDLE EAST DWC-LLC	Logistics	2,930,000	-	2,930,000	100.00	Dubai	-

(*1) Although the Group holds less than a majority of the voting rights, it maintains control through a contractual agreement among the shareholders.

(*2) The Group maintains control because all the non-controlling interests are composed of preferred shares without voting rights.

(2) The financial status of subsidiaries as of December 31, 2017, is as follows:

Name of subsidiaries	Korean won (in thousands): Total assets	Total liabilities	Total equity	Revenue	Net profit (loss)
S-Core Co., Ltd.	₩ 20,912,100	₩ 8,334,561	₩ 12,577,539	₩ 50,317,604	₩ 3,041,509
Open Hands Co., Ltd.	1,985,252	460,109	1,525,143	6,097,940	207,877
Miracom Inc.	71,291,861	26,695,799	44,596,062	261,187,401	7,601,324
MultiCampus Co., Ltd.	110,800,922	30,223,444	80,577,478	190,763,666	11,365,429
SVIC #31 Investment Partnership	8,831,669	41,687	8,789,982	-	(214,732)
SECUi Corp.	126,684,709	19,873,460	106,811,249	84,138,864	6,572,151
Samsung SDS Global SCL America, Inc.	236,015,536	42,336,696	193,678,840	874,722,500	11,865,578
Samsung SDS Latin Americas Solucoes Em Tecnologia Ltda	36,647,742	14,917,860	21,729,882	64,221,488	9,503,971
Samsung SDS Mexico, S.A. de C.V.	37,877,914	23,849,243	14,028,671	244,848,087	5,914,528
Language Testing International, Inc.	11,410,446	1,570,048	9,840,398	17,473,276	1,103,830
Samsung SDS Global SCL Panama S.A.	3,821,913	2,836,054	985,859	14,235,580	414,990
Samsung SDS Global SCL Chile Limitada	4,868,697	3,154,894	1,713,803	16,349,434	404,149
Samsung SDS Global SCL Peru S.A.C.	5,994,908	5,173,273	821,635	20,482,880	233,253
Samsung SDS Global SCL Colombia S.A.S.	4,919,086	5,083,871	(164,785)	20,117,770	95,397
Samsung SDS GSCL Canada., Ltd.	4,237,720	3,429,443	808,277	46,147,935	73,947
Samsung SDS Global SCL Latin America Logistica Ltda	45,629,084	13,445,415	32,183,669	114,588,894	6,414,958
Samsung SDS America, Inc.	117,381,205	57,769,088	59,612,117	295,515,262	10,648,588
Samsung SDS Europe, Ltd.	147,984,487	33,508,165	114,476,322	194,688,916	7,951,618
Samsung SDS Global SCL Netherlands Cooperatief U.A.	26,067,227	21,645,744	4,421,483	117,792,648	854,565

Name of subsidiaries	Korean won (in thousands) Total assets	Total liabilities	Total equity	Revenue	Net profit (loss)
Samsung SDS Global SCL Rus Limited Liability Company	₩ 13,840,147	₩ 8,212,462	₩ 5,627,685	₩ 68,201,138	₩ 2,378,175
Samsung SDS Global SCL Hungary Kft.	19,289,011	11,382,463	7,906,548	58,869,571	600,898
Samsung SDS Global SCL Slovakia, S.R.O.	49,909,493	24,364,175	25,545,318	175,383,792	2,995,459
Samsung SDS Global SCL Poland Sp. Z.o.o.	29,795,667	25,529,347	4,266,320	101,850,567	1,268,536
Samsung SDS Global SCL UK Limited	6,168,064	4,950,908	1,217,156	28,038,044	(314,632)
Samsung GSCL Sweden AB	1,891,863	1,306,527	585,336	7,367,775	(171,384)
Samsung SDS Global SCL France SAS	1,920,724	3,044	1,917,680	-	(1,193)
Samsung SDS China Co., Ltd.	124,617,342	25,576,451	99,040,891	35,430,830	19,897,247
Samsung IT Services (Beijing) Co., Ltd.	141,772,148	129,396,424	12,375,724	251,946,626	14,777,626
Samsung SDS Asia Pacific Pte, Ltd.	137,503,589	92,756,613	44,746,976	139,303,246	2,332,961
Samsung SDS Global SCL Asia Pacific Pte. Ltd.	5,382,753	3,254,319	2,128,434	14,265,552	232,593
Samsung SDS Vietnam Co., Ltd.	21,748,177	17,666,281	4,081,896	28,282,468	2,431,103
Samsung SDS GSCL Vietnam Co., Ltd.	294,631,238	69,852,022	224,779,216	649,554,583	62,174,932
ALS SDS Joint Stock Company	1,557,732	920,901	636,831	8,418,768	(50,981)
Samsung SDS Global SCL Philippines Co., Ltd. Inc.	13,373,933	10,979,113	2,394,820	49,643,434	17,434
Samsung SDS Global SCL Thailand Co., Ltd.	56,359,272	25,192,845	31,166,427	236,737,431	3,940,299
SDS - Acutech Co., Ltd.	2,388,089	1,666,559	721,530	5,620,216	59,901
Samsung SDS Global SCL Malaysia SDN. BHD	14,818,545	8,680,922	6,137,623	81,786,039	2,603,941
PT. Samsung SDS Global SCL Indonesia	19,973,889	9,499,671	10,474,218	90,151,183	5,632,673
Samsung SDS Global SCL Hong Kong Co., Ltd.	18,461,279	10,032,517	8,428,762	77,377,125	3,476,236
Samsung Data Systems India Private Limited	38,230,129	32,207,363	6,022,766	98,863,654	2,697,595
Samsung SDS India Private Limited	61,697,830	39,307,809	22,390,021	57,373,381	4,438,824
Samsung SDS Global SCL Beijing Co., Ltd.	202,550,118	82,039,959	120,510,159	686,059,053	15,572,193
Miracom, Inc. Asia Pacific Ltd.	834,374	45,587	788,787	-	(6,494)
Samsung SDS China Co., Ltd.	1,638,066	3,416,519	(1,778,453)	1,107,745	(1,079,818)
Samsung SDS Global Development Center Xi'an	9,005,421	1,369,404	7,636,017	19,505,177	1,569,337
Samsung SDS Global SCL Austraila Pty., Ltd.	15,649,018	16,274,596	(625,578)	74,978,382	48,781
Samsung SDS Global SCL Egypt	12,922,034	3,247,228	9,674,806	22,914,060	1,062,917
Samsung SDS Global SCL South Africa (PTY) Ltd.	3,774,129	3,156,999	617,130	31,966,573	(94,963)
Samsung SDS Global SCL Nakliyat ve Lojistik Anonim Sirketi	4,228,080	3,006,902	1,221,178	24,709,635	443,501
Samsung SDS Global Supply Chain Logistics Middle East DWC LLC	5,650,775	3,659,644	1,991,131	39,849,558	617,489
Samsung SDS Global SCL Baltics, SIA	746,003	549,224	196,779	720,229	(7,883)
Samsung SDS Global SCL Italy S.R.L. A Socio Unico	8,082,476	6,538,805	1,543,671	9,923,112	263,830
Samsung SDS Global Supply Chain Logistics Spain S.L.U.	718,113	11,038	707,075	-	(9,284)
Samsung GSCL Portugal, Sociedade Unipessoal LDA	204,043	-	204,043	-	(635)
Samsung SDS Global SCL Greece Societe Anonyme	698,948	490,339	208,609	1,325,631	(47,136)
Samsung SDS Global SCL Germany GmbH	14,449,387	15,313,040	(863,653)	17,713,111	(1,397,810)
Samsung SDS Global SCL Austria GmbH	79,452	12,704	66,748	-	(41,895)
Samsung SDS Global SCL Czech S.R.O.	59,379	-	59,379	-	(603)
Samsung SDS Global SCL Switzerland GMBH	294,469	-	294,469	-	(1,160)
Neo EXpress Transportation (NEXT), Inc.	944,286	322	943,964	-	-
Samsung SDS GSCL Romania S.R.L.	148,492	759	147,733	-	(750)
SDS Kerry (Shanghai) Supply Chain Solutions Limited	1,109,643	77,440	1,032,203	-	(32,257)

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(3) The status of subsidiaries newly included in the preparation of the consolidated financial statements for the year ended December 31, 2017, is as follows:

Location	Name of subsidiaries	Reason
England	Samsung SDS Global SCL UK Limited	Newly established
Sweden	Samsung GSCL Sweden AB	Newly established
France	Samsung SDS Global SCL France SAS	Newly established
Latvia	Samsung SDS Global SCL Baltics, SIA	Newly established
Italy	Samsung SDS Global SCL Italy S.R.L. A Socio Unico	Newly established
Spain	Samsung SDS Global Supply Chain Logistics Spain S.L.U.	Newly established
Portugal	Samsung GSCL Portugal, Sociedade Unipessoal LDA	Newly established
Greece	Samsung SDS Global SCL Greece Societe Anonyme	Newly established
Germany	Samsung SDS Global SCL Germany GmbH	Newly established
Austria	Samsung SDS Global SCL Austria GmbH	Newly established
Czech	Samsung SDS Global SCL Czech S.R.O.	Newly established
Switzerland	Samsung SDS Global SCL Switzerland GMBH	Newly established
America	Neo EXpress Transportation (NEXT) Inc.	Newly established
Romania	Samsung SDS GSCL Romania S.R.L.	Newly established
China	SDS Kerry (Shanghai) Supply Chain Solutions Limited	Newly established
India	Samsung SDS India Private Limited	Established by business divestiture

13. INVESTMENTS IN ASSOCIATES:

(1) Details of the Group's investments in associates as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017			December 31, 2016
	Ownership (%)	Acquisition cost	Book value	Book value
Korea Information Certificate Authority Inc. (*1)	6.42	₩ 1,128,139	₩ 4,169,156	₩ 3,883,642
DongA.com Co., Ltd. (*1)	18.97	1,306,377	2,895,857	2,561,714
Dunet, Inc. (*1)	18.01	971,068	71,447	65,209
SERI Technologies, Inc.	29.00	4,190,500	4,402,038	4,244,769
iMarket Asia Co., Ltd.	40.56	18,799,534	28,551,580	30,209,984
		₩ 26,395,618	₩ 40,540,078	₩ 40,965,318

(*1) Although the Group's each ownership of Korea Information Certificate Authority Inc., DongA.Com Co., Ltd. and Dunet Inc. is less than 20%, these investments are classified as investments in associates because the Group can participate in decision making on the financial and operating policies of the investees.

(2) Summary of financial information of associates as of and for the years ended December 31, 2017 and 2016, is as follows:

<December 31, 2017>

	Korean won (in thousands)				
	Total assets	Total liabilities	Total equity	Revenues	Net income (loss)
Korea Information Certificate Authority Inc.	₩ 91,120,503	₩ 19,142,502	₩ 71,978,001	₩ 35,694,616	₩ 4,480,821
DongA.com Co., Ltd.	17,824,003	2,556,609	15,267,394	19,003,763	2,258,682
Dunet, Inc.	10,758,176	10,361,467	396,709	10,103,396	22,729
SERI Technologies, Inc.	9,234,003	4,609,434	4,624,569	17,928,792	545,982
iMarket Asia Co., Ltd.	128,392,143	74,750,695	53,641,448	575,816,174	3,406,491

<December 31, 2016>

	Korean won (in thousands)				
	Total assets	Total liabilities	Total equity	Revenues	Net income (loss)
Korea Information Certificate Authority Inc.	₩ 69,435,966	₩ 17,074,758	₩ 52,361,208	₩ 34,623,507	₩ 6,233,120
DongA.com Co., Ltd.	15,903,342	2,397,599	13,505,743	19,911,066	1,842,987
Dunet, Inc.	8,177,753	7,815,683	362,070	8,446,077	(204,376)
SERI Technologies, Inc.	9,063,274	4,981,014	4,082,260	18,195,672	792,308
iMarket Asia Co., Ltd.	147,120,387	92,447,033	54,673,354	588,045,973	6,302,547

(3) Details of changes in investments in associates accounted for using the equity method for the years ended December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)				
	Beginning balance	Share of profit of associates	Change in associates' equity	Others	Ending balance
Korea Information Certificate Authority Inc.	₩ 3,883,642	₩ 293,823	₩ 34,885	₩ 406,806	₩ 4,619,156
DongA.com Co., Ltd.	2,561,714	397,230	113	(63,200)	2,895,857
Dunet, Inc.	65,209	6,238	-	-	71,447
SERI Technologies, Inc.	4,244,769	157,269	-	-	4,402,038
iMarket Asia Co., Ltd.	30,209,984	1,099,912	(2,758,316)	-	28,551,580
Total	₩40,965,318	₩ 1,954,472	₩ (2,723,318)	₩ 343,606	₩ 40,540,078

<December 31, 2016>

	Korean won (in thousands)					
	Beginning balance	Share of profit (loss) of associates	Change in associates' equity	Others	Disposal	Ending balance
Korea Information Certificate Authority Inc.	₩ 3,471,245	₩ 468,770	₩ 13,627	₩ (70,000)	₩ -	₩ 3,883,642
DongA.com Co., Ltd.	2,382,532	349,707	3,939	(31,634)	(142,830)	2,561,714
Dunet, Inc.	102,017	(36,808)	-	-	-	65,209
SERI Technologies, Inc.	4,014,999	229,770	-	-	-	4,244,769
iMarket Asia Co., Ltd.	27,574,529	2,556,313	79,142	-	-	30,209,984
Total	₩37,545,322	₩ 3,567,752	₩ 96,708	₩ (101,634)	₩ (142,830)	₩ 40,965,318

(4) Market price information of the marketable investment in associates owned by the Group as of December 31, 2017, is as follows:

		Korean won (in thousands, except per share amount)		
	Number of shares	Market value per share	Market price	Book value
Korea Information Certificate Authority Inc.	2,000,000 shares	₩ 5,670	₩ 11,340,000	₩ 4,619,156

14. PROPERTY AND EQUIPMENT:

(1) Details of carrying amounts of property and equipment as of December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)					
	Land	Buildings	Machinery and equipment	Others	Construction in progress	Total
Acquisition costs	₩ 118,735,985	₩ 581,102,586	₩1,552,343,608	₩ 151,850,237	₩ 5,628,297	₩2,409,660,713
Accumulated depreciation	-	(88,746,643)	(1,209,895,901)	(82,460,345)	-	(1,381,102,889)
Net book value	₩ 118,735,985	₩ 492,355,943	₩ 342,447,707	₩ 69,389,892	₩ 5,628,297	₩1,028,557,824

<December 31, 2016>

	Korean won (in thousands)					
	Land	Buildings	Machinery and equipment	Others	Construction in progress	Total
Acquisition costs	₩ 106,967,216	₩ 579,220,384	₩1,699,737,429	₩ 145,115,481	₩ 3,122,599	₩2,534,163,109
Accumulated depreciation	-	(71,871,746)	(1,341,644,576)	(68,685,624)	-	(1,482,201,946)
Net book value	₩ 106,967,216	₩ 507,348,638	₩ 358,092,853	₩ 76,429,857	₩ 3,122,599	₩1,051,961,163

(2) Changes in property and equipment for the years ended December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)					
	Land	Buildings	Machinery and equipment	Others	Construction in progress	Total
Beginning balance	₩ 106,967,216	₩ 507,348,638	₩ 358,092,853	₩ 76,429,857	₩ 3,122,599	₩ 1,051,961,163
Acquisition	-	-	168,899,741	8,590,445	21,205,233	198,695,419
Transfer	11,768,769	1,882,203	1,821,657	3,391,840	(18,699,535)	164,934
Disposal	-	-	(736,178)	(220,016)	-	(956,194)
Depreciation	-	(16,874,898)	(178,631,935)	(18,220,286)	-	(213,727,119)
Others	-	-	(6,998,431)	(581,948)	-	(7,580,379)
Ending balance	₩ 118,735,985	₩ 492,355,943	₩ 342,447,707	₩ 69,389,892	₩ 5,628,297	₩ 1,028,557,824

<December 31, 2016>

	Korean won (in thousands)					
	Land	Buildings	Machinery and equipment	Others	Construction in progress	Total
Beginning balance	₩ 157,882,591	₩ 562,854,200	₩ 426,678,230	₩ 80,218,940	₩ 1,310,100	₩ 1,228,944,061
Acquisition	-	30,543	167,370,045	16,926,845	5,475,799	189,803,232
Transfer	-	2,709,300	1,352,009	1,375,979	(3,663,300)	1,773,988
Disposal	(50,915,375)	(40,722,073)	(29,828,235)	(5,569,618)	-	(127,035,301)
Depreciation	-	(16,925,904)	(201,559,458)	(17,440,278)	-	(235,925,640)
Others	-	(597,428)	(5,919,738)	917,989	-	(5,599,177)
Ending balance	₩ 106,967,216	₩ 507,348,638	₩ 358,092,853	₩ 76,429,857	₩ 3,122,599	₩ 1,051,961,163

(3) The Group has electronic equipment insurance for the damage of building, machinery and vehicles up to the loss of ₩737,893 million, and has machinery insurance and comprehensive property insurance up to the loss of ₩1,092,437 million with Samsung Fire & Marine Insurance Co., Ltd. as of December 31, 2017. The Group is also insured with QBE Insurance International Ltd. for up to SGD 12.4 million, SOMPO for up to BRL 30.3 million and Iffo Tokio General Insurance Co., Ltd. for up to INR 22.2 million.

15. INTANGIBLE ASSETS:

(1) Details of the carrying amounts of intangible assets as of December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)				
	Goodwill	Development costs	Others (*1)	Software	Total
Acquisition cost	₩ 624,136,978	₩ 282,929,805	₩ 379,951,589	₩ 398,750,794	₩ 1,685,769,166
Accumulated amortization	-	(152,606,618)	(212,426,318)	(325,068,094)	(690,101,030)
Accumulated impairment	(33,631,803)	(25,249,457)	(1,920,874)	(6,501)	(60,808,635)
Net book value	₩ 590,505,175	₩ 105,073,730	₩ 165,604,397	₩ 73,676,199	₩ 934,859,501

(*1) Others are composed of identifiable intangible assets, such as customer relationships, customer value and technology value obtained upon business mergers, memberships and industrial property rights.

<December 31, 2016>

	Korean won (in thousands)				
	Goodwill	Development costs	Others (*1)	Software	Total
Acquisition cost	₩ 624,699,730	₩ 276,196,736	₩ 377,391,116	₩ 422,382,576	₩ 1,700,670,158
Accumulated amortization	-	(112,094,602)	(176,826,661)	(324,486,609)	(613,407,872)
Accumulated impairment	(32,756,864)	(11,204,729)	(1,906,446)	(6,501)	(45,874,540)
Net book value	₩ 591,942,866	₩ 152,897,405	₩ 198,658,009	₩ 97,889,466	₩ 1,041,387,746

(*1) Others are composed of identifiable intangible assets, such as customer relationships, customer value and technology value obtained upon business mergers, memberships and industrial property rights.

(2) Changes in intangible assets for the years ended December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)				
	Goodwill	Development costs	Others	Software	Total
Beginning balance	₩ 591,942,866	₩ 152,897,405	₩ 198,658,009	₩ 97,889,466	₩ 1,041,387,746
Acquisition	-	6,634,724	2,697,814	21,689,087	31,021,625
Transfer	-	98,345	60,806	(73,362)	85,789
Disposal	-	-	(195,613)	(36,579)	(232,192)
Amortization	-	(40,512,016)	(34,855,376)	(43,583,562)	(118,950,954)
Others	(1,437,691)	(14,044,728)	(761,243)	(2,208,851)	(18,452,513)
Ending balance	₩ 590,505,175	₩ 105,073,730	₩ 165,604,397	₩ 73,676,199	₩ 934,859,501

<December 31, 2016>

	Korean won (in thousands)				
	Goodwill	Development costs	Others	Software	Total
Beginning balance	₩ 589,393,045	₩ 157,714,371	₩ 233,460,303	₩ 119,994,697	₩ 1,100,562,416
Acquisition	2,400,000	36,861,304	2,347,917	45,362,100	86,971,321
Transfer	-	-	35,018	(1,315,374)	(1,280,356)
Disposal	-	-	(3,539,313)	(9,460,881)	(13,000,194)
Amortization	-	(43,109,955)	(31,940,192)	(53,930,873)	(128,981,020)
Others	149,821	1,431,685	(1,705,724)	(2,760,203)	(2,884,421)
Ending balance	₩ 591,942,866	₩ 152,897,405	₩ 198,658,009	₩ 97,889,466	₩ 1,041,387,746

(3) The amortization expenses of intangible assets for the years ended December 31, 2017 and 2016, are presented in the following accounts:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Cost of sales	₩ 68,565,553	₩ 84,445,015
Selling and administrative expenses (*1)	50,385,401	44,536,005
Total	₩ 118,950,954	₩ 128,981,020

(*1) Research and development expenses of ₩1,446 million and ₩1,582 million are included in selling and administrative expenses for the years ended December 31, 2017 and 2016, respectively.

(4) The Group recognized research and development expenses amounting to ₩127,072 million and ₩119,041 million for the years ended December 31, 2017 and 2016, respectively.

(5) Goodwill

Goodwill was allocated to the Group's CGUs (groups) as of December 31, 2017, as follows:

CGU	Korean won (in thousands)
Samsung Networks, Inc.	₩ 417,495,744
MultiCampus Co., Ltd.	43,313,410
Samsung SNS Co., Ltd.	37,428,837
S-CORE CO., Ltd.	19,967,668
Miracom Inc.	8,125,514
EXE C&T Co., Ltd.	7,283,816
SERICEO	6,458,968
LTI Inc.	4,397,758
SECUi Corp.	43,633,460
Others	2,400,000
Total	₩ 590,505,175

The Group performed impairment test on goodwill as of December 31, 2017, considering the changes in CGUs for the year ended December 31, 2017. The recoverable amounts of CGUs (groups) have been determined based on its fair value, less costs to sell, or value in use. Recoverable amount of MultiCampus Co., Ltd. (formerly Credu Co., Ltd.) was determined based on fair value, less cost to sell, which was calculated by deducting the per unit disposal cost as of the impairment test date. For CGUs, other than MultiCampus Co., Ltd. (formerly Credu Co., Ltd.), the recoverable amounts were determined based on value in use. Value in use is calculated using cash flow projections based on financial budgets approved by management covering a one-year period. Cash flows beyond the one-year period are extrapolated using the estimated growth rates stated below. Based on the impairment test, no goodwill impairment is recorded as the recoverable amount of each CGU exceeded the carrying amount.

The key assumptions used for value-in-use estimation as of December 31, 2017, are as follows:

	Samsung Networks, Inc.	Samsung SNS Co., Ltd.	EXE C&T Co., Ltd.	SECUi Corp.
Sales growth rate (*1)	3.9%–5.1%	3.9%–5.1%	5.1%–18.7%	3.9%–5.1%
Long-term sustainable growth rate (*2)	2.00%	1.00%	1.00%	1.00%
Discount rate (*3)	6.87%	7.40%	5.46%	9.35%

(*1) Weighted-average sales growth rate used to extrapolate cash flows after the budget period was calculated based on experience.

(*2) Weighted-average growth rate after five years.

(*3) Discount rate applied to the cash flow projections.

Management determined the gross margin based on historical performance and its expectations of market development. The weighted-average growth rates used are consistent with the industry reports. The discount rates used reflect specific risks relating to the relevant CGU.

(6) Details of impairment on development costs for the year ended December 31, 2017, are as follows:

	Korean won (in thousands)			
		Impairment loss		Recoverable amount
	Book value	December 31, 2017	Accumulated amount	Assessment methods
Project A	₩ -	₩ (1,707,954)	₩ (1,707,954)	Fair value
Project B	-	(2,457,650)	(2,457,650)	Fair value
Project C	-	(335,313)	(335,313)	Fair value
Project D	-	(4,968,939)	(4,968,939)	Fair value
Project E	-	(1,657,043)	(1,657,043)	Fair value
Project F	-	(2,917,829)	(2,917,829)	Fair value
	₩ -	₩ (14,044,728)	₩ (14,044,728)	

(*) The Group determined to suspend projects and recognized impairment loss on the related projects.

(7) Details of major development costs as of December 31, 2017, are as follows:

	Korean won (in thousands)	
	Book value	Residual Amortization period
Project G	₩ 13,018,794	1 year–2 years
Project H	4,019,002	1 year–3 years
Project I	3,523,754	1 year–6 years
Project J	36,834,185	1 year–2 years
Project K	44,527,506	1 year–4 years
Others	3,150,489	1 year–6 years
	₩ 105,073,730	

16. BORROWINGS AND CORPORATE BOND:

Details of borrowings and debentures as of December 31, 2017 and 2016, are as follows:

	Financial institutions	Annual interest rates (%)	Korean won (in thousands) December 31, 2017	Korean won (in thousands) December 31, 2016
Short-term borrowing:				
Bank borrowings	KEB Hana Bank	-	₩ -	₩ 1,697,043
	CITIBANK	8.22–9.60	820,296	911,440
Current portion of long-term borrowings:				
Financial lease liabilities (*1)	IBM Korea Inc.	-	-	2,464,461
Long-term borrowings:				
Financial lease liabilities (*1)	IBM Korea Inc.	-	-	1,615,271
Corporate bond:				
Privately placed bond	MG Community Credit Cooperatives	2.21	10,000	10,000
	Total		₩ 830,296	₩ 6,698,215

(*1) Details of the above finance lease liabilities are described in Note 19 (4).

17. PROVISIONS:

(1) Details of provisions as of December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands) Current	Non-current	Other (*1)	Total
Provision for repairs	₩ 342,416	₩ 854,010	₩ -	₩ 1,196,426
Provision for project losses	-	-	6,921,082	6,921,082
Provision for warranties	1,098,515	-	-	1,098,515
Asset retirement obligation	172,664	13,993,650	-	14,166,314
Provision for business compensation	690,484	-	-	690,484
Others	13,594,973	-	-	13,594,973
Total	₩ 15,899,052	₩ 14,847,660	₩ 6,921,082	₩ 37,667,794

(*1) The Group makes provisions for estimated losses of unfinished projects by adding to advances received or deducting from non-trade receivables.

<December 31, 2016>

	Korean won (in thousands) Current	Non-current	Other (*1)	Total
Provision for repairs	₩ 632,480	₩ 898,692	₩ -	₩ 1,531,172
Provision for project losses	-	-	24,286,943	24,286,943
Provision for warranties	438,703	-	-	438,703
Asset retirement obligation	-	14,215,559	-	14,215,559
Provision for business compensation	690,484	-	-	690,484
Others	7,019,272	-	-	7,019,272
Total	₩ 8,780,939	₩ 15,114,251	₩ 24,286,943	₩ 48,182,133

(*1) The Group makes provisions for estimated losses of unfinished projects by adding to advances received or deducting from non-trade receivables.

(2) The changes in provisions for the years ended December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)				
	Beginning balance	Increase	Utilization	Reversal	Ending balance
Provision for repairs (*1)	₩ 1,531,172	₩ 153,564	₩ -	₩ (488,310)	₩ 1,196,426
Provision for project losses (*2)	24,286,943	598,364	(16,256,001)	(1,708,224)	6,921,082
Provision for warranties (*3)	438,703	2,564,814	-	(1,905,002)	1,098,515
Asset retirement obligation (*4)	14,215,559	1,383,509	(1,432,754)	-	14,166,314
Provision for business compensation	690,484	-	-	-	690,484
Others	7,019,272	7,790,068	(1,003,811)	(210,556)	13,594,973
Total	₩ 48,182,133	₩ 12,490,319	₩ (18,692,566)	₩ (4,312,092)	₩ 37,667,794

<December 31, 2016>

	Korean won (in thousands)				
	Beginning Balance	Increase	Utilization	Reversal	Ending balance
Provision for repairs (*1)	₩ 1,976,700	₩ -	₩ -	₩ (445,528)	₩ 1,531,172
Provision for project losses (*2)	22,674,339	10,748,312	(5,365,752)	(3,769,956)	24,286,943
Provision for warranties (*3)	302,503	136,200	-	-	438,703
Asset retirement obligation (*4)	12,934,006	1,894,216	(525,517)	(87,146)	14,215,559
Provision for business compensation	20,036,407	1,732,241	(21,078,164)	-	690,484
Others	6,358,682	1,034,798	(374,208)	-	7,019,272
Total	₩ 64,282,637	₩ 15,545,767	₩ (27,343,641)	₩ (4,302,630)	₩ 48,182,133

(*1) The Group makes provisions for estimated costs of project repairs based on historical experience and terms of guarantees.

(*2) The Group makes provisions for project losses based on the amount of losses estimated to incur. Recognized losses are presented as deductions from non-trade receivables or additions to advances received.

(*3) The Group makes provisions for estimated costs of future services arising from warranties, exchanges and refunds and repairs based on warranty period (1 year–4 years) and historical rate.

(*4) The Group makes provisions for expected expense to be paid for restoration of leasehold assets to their original condition in the future.

18. RETIREMENT BENEFIT PLANS:

The Group concurrently operates defined contribution retirement benefit plans and defined retirement benefit plans.

(1) Defined contribution retirement benefit plans

Defined contribution retirement benefit plans of ₩4,320 million and ₩3,031 million were recognized as expense in the consolidated statements of comprehensive income for the years ended December 31, 2017 and 2016, respectively. The Group has unpaid contributions of ₩176 million as of December 31, 2017, and has no unpaid contributions as of December 31, 2016.

(2) Defined benefit retirement benefit plans

1) Net defined benefit liabilities (assets) recognized in the consolidated statements of financial position as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Present value of funded defined benefit obligation	₩ 872,125,290	₩ 821,510,628
Present value of unfunded defined benefit obligation	19,174,162	21,568,495
	891,299,452	843,079,123
Less: fair value of plan assets	(898,847,921)	(867,198,264)
Net defined benefit liabilities (assets)	₩ (7,548,469)	₩ (24,119,141)

2) Changes in net defined benefit liabilities (assets) for the years ended December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)		
	Defined benefit obligation	Fair value of plan assets	Net defined benefit liabilities (assets)
Beginning balance	₩ 843,079,123	₩ (867,198,264)	₩ (24,119,141)
Included in profit or loss:			
Current service cost	103,513,708	-	103,513,708
Past service cost	7,624,356	-	7,624,356
Interest cost (income)	28,035,302	(27,634,180)	401,122
Others	-	(5,125,633)	(5,125,633)
	139,173,366	(32,759,813)	106,413,553
Included in OCI:			
Remeasurement elements:			
Actuarial loss (gain) arising from:			
Effect of change in discount rate	(22,345,889)	-	(22,345,889)
Demographic assumptions	(248,987)	-	(248,987)
Financial assumptions	(32,473,360)	-	(32,473,360)
Experience adjustment	8,313,072	-	8,313,072
Return on plan assets	-	13,303,968	13,303,968
	(46,755,164)	13,303,968	(33,451,196)
Others:			
Contributions paid by the employer	-	(77,674,874)	(77,674,874)
Benefits paid	(56,040,815)	69,539,091	13,498,276
Transfer from affiliates	8,984,223	(4,199,662)	4,784,561
Business combinations	1,690,856	-	1,690,856
Others	1,167,863	141,633	1,309,496
	(44,197,873)	(12,193,812)	(56,391,685)
Ending balance	₩ 891,299,452	₩ (898,847,921)	₩ (7,548,469)

<December 31, 2016>

	Korean won (in thousands)		
	Defined benefit obligation	Fair value of plan assets	Net defined benefit liabilities (assets)
Beginning balance	₩ 838,486,002	₩ (822,598,867)	₩ 15,887,135
Included in profit or loss:			
Current service cost	114,144,974	-	114,144,974
Past service cost	-	-	-
Interest cost (income)	27,840,363	(25,943,371)	1,896,992
	141,985,337	(25,943,371)	116,041,966
Included in OCI:			
Remeasurement elements:			
Actuarial loss (gain) arising from:			
Demographic assumptions	924,627	-	924,627
Financial assumptions	(47,505,192)	-	(47,505,192)
Experience adjustment	(18,829,405)	-	(18,829,405)
Return on plan assets	-	11,075,014	11,075,014
	(65,409,970)	11,075,014	(54,334,956)
Others:			
Contributions paid by the employer	-	(84,952,146)	(84,952,146)
Benefits paid	(72,350,797)	56,767,544	(15,583,253)
Transfer from affiliates	1,563,707	(1,563,707)	-
Liabilities assumed in business	(1,195,156)	17,269	(1,177,887)
	(71,982,246)	(29,731,040)	(101,713,286)
Ending balance	₩ 843,079,123	₩ (867,198,264)	₩ (24,119,141)

3) The principal actuarial assumptions used as of December 31, 2017 and 2016, are as follows:

	Percentage (%)	
	December 31, 2017	December 31, 2016
Discount rate	3.80	3.50
Future salary increases (including inflation rate)	3.77–5.50	4.36–5.65

Assumptions regarding the future mortality rate are based on average life expectancy and published statistics.

4) Details of fair value of plan assets as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
	Carrying amounts	Composition (%)	Carrying amounts	Composition (%)
Cash and cash equivalents	₩ 895,986,245	99.7	₩ 865,615,904	99.8
Others	2,861,676	0.3	1,582,360	0.2
Total	₩ 898,847,921	100.0	₩ 867,198,264	100.0

5) The sensitivity analysis of the overall defined benefit liability in accordance with changes to the principal assumptions as of December 31, 2017 and 2016, is as follows:

	Korean won (in thousands)		
	December 31, 2017		
	Changes in principal assumption	Effect due to increase in principal assumption	Effect due to decrease in principal assumption
Discount rate	1.00% point	₩ (63,238,007)	₩ 72,187,058
Salary growth rate	1.00% point	71,116,841	(63,564,634)

	Korean won (in thousands)		
	December 31, 2016		
	Changes in principal assumption	Effect due to increase in principal assumption	Effect due to decrease in principal assumption
Discount rate	1.00% point	₩ (71,558,669)	₩ 68,439,580
Salary growth rate	1.00% point	66,854,546	(71,524,845)

Decreases in corporate bond yields will increase define benefit liabilities, although this will be partially offset by an increase in the value of the plan assets. The most significant risk will be exposed through an increase in defined benefit liabilities.

The above sensitivity analyses are based on a change in an assumption, while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. The sensitivity of the defined benefit liabilities to changes in principal actuarial assumptions is calculated using the projected unit credit method, the same method applied when calculating the defined benefit obligations recognized in the consolidated statement of financial position.

The methods and types of assumptions used in preparing the sensitivity analysis have not been changed compared to the previous year.

6) Expected contributions to defined benefit plans for the year ending December 31, 2018, amount to ₩106,925 million.

7) The weighted-average duration of the defined benefit obligations as of December 31, 2017, is 6.61–7.83 years.

19. COMMITMENTS AND CONTINGENCIES:

(1) Guarantees

Details of guarantees provided for employees by the Group as of December 31, 2017, are as follows:

	Financial institutions	Korean won (in thousand)
Guarantee of employees' debt	Woori Bank (*1)	₩ 10,000,000

(*1) Guarantees are provided for the employee's housing loan owed to the financial institutions.

(2) Guarantees provided and major commitments

Details of guarantees provided by the Group and major commitments with financial institutions as of December 31, 2017, are as follows:

	Korean won (in thousands), USD, CNY, EUR, INR, KWD, VND, AUD, MYR, EGP, HKD, LKR, BRL				
Financial institutions	Detail	Limits		Executed amounts	
KEB Hana Bank	Payment guarantee	USD	16,000,000		-
	Payment guarantee	CNY	100,000,000	CNY	5,434,319
Shinhan Bank	Import letter of credit	USD	27,000,000		-
	Bills bought	USD	5,000,000		-
	Payment guarantee	USD	4,000,000	VND	43,672,400,000
	Payment guarantee	VND	19,467,000,000	VND	19,467,000,000
	Payment guarantee	USD	34,299,000	USD	3,089,125
Woori Bank	Payment guarantee	USD	38,000,000	USD	2,440,000
	Payment guarantee	CNY	1,749,659,55	CNY	1,749,659,55
Kookmin Bank	Payment guarantee and import letter of credit	USD	20,000,000	USD	875,138
	Local letter of credit	₩	5,000,000		-
HSBC	Payment guarantee	USD	8,800,000	USD	1,775,509
		INR	300,000,000	INR	192,600,564
				USD	22,605
	Payment guarantee	KWD	12,937,972	KWD	1,050,673
	Payment guarantee	AUD	45,000	AUD	45,000
	Overseas financing guarantee	USD	5,100,000		-
		EUR	2,450,000		-
		INR	320,000,000		-
Bank of China	Payment guarantee	USD	18,000,000		-
CITIBANK	Payment guarantee	USD	154,891	USD	154,891
	Payment guarantee	LKR	2,337,425	LKR	2,337,425
	Payment guarantee	KWD	1,661,200	KWD	1,661,200
	Overseas financing guarantee	USD	56,500,000	MYR	240,000
				EGP	25,000
				EUR	555,845
				HKD	1,500,000
				USD	200,237
China Merchants Bank	Payment guarantee	CNY	250,000,000	CNY	53,989,269
	Overseas financing guarantee	CNY	50,000,000		-
Commerzbank AG	Payment guarantee	EUR	23,309	EUR	23,309
Banco de Chile	Payment guarantee	BRL	14,159,342	BRL	14,159,342
ITAU UNIBANCO	Payment guarantee	BRL	25,000	BRL	25,000

(3) Other commitments

1) The Group entered into general-term loan agreements with an aggregate credit limit of ₩20,000 million with Shinhan Bank as of December 31, 2017. In addition, a domestic subsidiary, S-Core Co., Ltd., entered into a general-term loan agreement with an aggregate credit limit of ₩3,000 million with Shinhan Bank as of December 31, 2017.

2) The Group has bank overdraft facilities with Woori Bank and three other banks amounting to ₩70,500 million in aggregate, and a domestic subsidiary, Miracom Inc., has bank overdraft facilities with Woori Bank and one other bank amounting to ₩5,200 million in aggregate as of December 31, 2017.

3) The Group has a contractual agreement of business-to-business electronic payment system with KEB Hana Bank and three other banks amounting to ₩67,562 million, with a credit limit of ₩340,000 million, as of December 31, 2017.

4) The Group has been provided a payment guarantee amounting to ₩348,614 million by Korea Software Financial Cooperative and Seoul Guarantee Insurance Company, and in relation to the guarantee, an equity investment of ₩1,570 million is provided to Korea Software Financial Cooperative as collateral as of December 31, 2017. Domestic subsidiaries of Miracom Inc. and MultiCampus Co., Ltd. are provided with payment guarantees by Korea Software Financial Cooperative amounting to ₩7,048 million and ₩5,340 million, respectively, and each of the subsidiaries has provided equity investment of ₩270 million and ₩150 million, respectively, to Korea Software Financial Cooperative as collateral. In addition, MultiCampus Co., Ltd. and SECUi. Corp. are provided with payment guarantees by Seoul Guarantee Insurance Company amounting to ₩1,576 million and ₩1,503 million as of December 31, 2017, respectively.

(4) Leases

1) Finance lease

The Group, some domestic and overseas subsidiaries, Samsung SDS Europe Ltd. and Samsung SDS Asia Pacific Pte. Ltd. has terminated all of its financial leases as of December 31, 2017, and leases certain property and equipment with a book value of ₩3,651 million as of December 31, 2016.

Details of the minimum lease payments under the finance lease agreements as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
	Minimum lease payments	Present values	Minimum lease payments	Present values
Within 1 year	₩ -	₩ -	₩ 2,526,929	₩ 2,464,461
1 year–5 years	-	-	1,646,724	1,615,271
Total	-	-	4,173,653	4,079,732
Less: present value of adjustment	-	-	(93,921)	-
Finance lease payables	₩ -	₩ -	₩ 4,079,732	₩ -

2) Operating lease

The Group leases vehicles under operating lease arrangements with Samsung Card Co., Ltd., Ethoz, Emozin Sdn. Bhd. and other lessors. The future lease payments under operating leases as of December 31, 2017, are as follows:

	Korean won (in thousands)
Within 1 year	₩ 2,903,472
More than 1 year	1,834,427

The recognized expenses for the above operating lease arrangements amount to ₩4,738 million and ₩3,755 million for the years ended December 31, 2017 and 2016, respectively.

20. SHARE CAPITAL AND PREMIUM:

Under its Articles of Incorporation, the Group is authorized to issue 200,000,000 common shares with a par value of ₩500 per share, and 50,000,000 shares of participating preferred share, which are non-voting and are entitled to receive a minimum cash dividend of more than 1% of par value upon resolution by the board of directors. In addition, the Group is authorized to issue to investors, other than current shareholders, convertible debentures and debentures with warrants with face values of up to ₩67,000 million, where ₩50,000 million of such debentures is for common shares and the remaining ₩17,000 million is for preferred shares; 77,377,800 shares are issued and share capital amounts to ₩38,689 million as of December 31, 2017.

21. RETAINED EARNINGS:

(1) Retained earnings as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Legal reserve:		
Earned surplus reserve (*1)	₩ 19,344,450	₩ 19,344,450
Reserve for business development (*2)	21,000,000	21,000,000
Discretionary reserve:		
Reserve for business rationalization (*3)	10,098,807	10,098,807
Reserve for research and human resource development (*4)	-	13,200,000
Unappropriated retained earnings	4,296,604,366	3,811,069,394
Total	₩ 4,347,047,623	₩ 3,874,712,651

(*1) The Commercial Code of the Republic of Korea requires the Group to appropriate, as a legal reserve, an amount equal to a minimum of 10% of cash dividends paid, until such reserve equals 50% of its issued capital stock. This reserve is not available for the payment of cash dividends, but may be transferred to capital stock or used to reduce accumulated deficit, if any, with the ratification of the Group's majority shareholders.

(*2) In accordance with the former corporate income tax law, the Group has accumulated reserves for business development by the amount of retained earnings in excess of accumulated earnings. This amount may be transferred to capital stock or used to reduce accumulated deficit, if any, with the ratification of the Group's majority shareholders.

(*3) Pursuant to the Special Tax Treatment Control Law, the Group is required to appropriate, as a reserve for business rationalization, a portion of retained earnings equal to tax reductions arising from investment and other tax credits. Due to revision made to Korean tax laws during 2002, such reserves are no longer required.

(*4) Pursuant to the Special Tax Treatment Control Law, the Group appropriates retained earnings as a reserve for research and human resource development. This reserve will be reversed in accordance with the relevant tax law.

(2) Changes in retained earnings for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Beginning balance	₩ 3,874,712,651	₩ 3,449,529,420
Net income attributable to the owners of the Group	530,347,611	463,858,324
Dividends	(58,012,639)	(38,675,093)
Ending balance	₩ 4,347,047,623	₩ 3,874,712,651

(3) Details of dividends declared for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Number of common shares outstanding	77,350,186 shares	77,350,186 shares
Dividend ratio	400%	150%
Dividends	₩ 154,700,372	₩ 58,012,639

22. OTHER COMPONENTS OF EQUITY:

(1) Details of other components of equity as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Unrealized holding gains on AFS financial assets	₩ 2,412,620	₩ 259,154
Changes in associates' accumulated other comprehensive income	175,695	2,040,156
Changes in associates' accumulated other comprehensive losses	(858,857)	-
Foreign currency translation differences	(112,335,377)	(24,369,342)
Treasury stock	(1,592,531)	(1,592,531)
Other capital adjustment	81,707,590	72,873,759
Remeasurement of defined benefit liability	(94,433,972)	(119,385,098)
Total	₩ (124,924,832)	₩ (70,173,902)

(2) Changes in treasury stock for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
	Number of shares	Acquisition cost	Number of shares	Acquisition cost
Beginning balance	27,614 shares	₩ 1,592,531	27,614 shares	₩ 1,592,531
Acquisition	-	-	-	-
Ending balance	27,614 shares	₩ 1,592,531	27,614 shares	₩ 1,592,531

The Group acquired 13,515 shares (at ₩56,406 per share) of treasury stocks from shareholders who exercised the appraisal right against the merger of Samsung Networks Co., Ltd., in accordance with the Commercial Code of the Republic of Korea. The Group holds 9,005 common shares due to transfer of treasury shares owned by Samsung Networks Co., Ltd. and 4,197 common shares due to acquisition of fractional shares.

In addition, the Group holds 346 common shares due to transfer of treasury shares owned by Samsung SNS Co., Ltd. and 551 common shares due to acquisition of fractional shares for the year ended December 31, 2013.

The Group intends to dispose of its treasury shares depending on the market conditions.

23. REVENUE:

(1) Breakdown of revenue for the years ended December 31, 2017 and 2016, is as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Sales of goods	₩ 223,492,601	₩ 201,309,019
IT services (*1)	4,906,133,852	4,540,465,605
Logistics BPO	4,169,579,677	3,438,412,237
Total	₩ 9,299,206,130	₩ 8,180,186,861

(*1) Revenue from fixed-price contracts is included.

(2) Details of unbilled construction and advanced construction billing as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Cumulative costs incurred	₩ 768,605,207	₩ 909,521,683
Add: cumulative income	140,326,334	86,349,130
Less: cumulative losses	(158,600,055)	(171,973,185)
Cumulative construction income	750,331,486	823,897,628
Less: work-in-process billings	(747,115,534)	(751,924,618)
Total	₩ 3,215,952	₩ 71,973,010
Unbilled construction (non-trade receivables)	₩ 30,592,655	₩ 83,861,571
Advanced construction billings (advances)	(27,376,703)	(11,888,561)
	₩ 3,215,952	₩ 71,973,010

(3) With regard to contracts recognizing stage of completion revenue, major contracts under the cost-based input method for which the respective contract amount is 5% or more of the prior year's revenue amount are as follows:

				Korean won (in thousands)			
				Unbilled construction		Receivables	
	Contract date	Completion date	Percentage of completion	Total amount	Accumulated impairment loss	Total amount	Accumulated impairment loss
Kuwait KOC project	2010.03.30	2018.01.31	99%	₩ -	₩ -	₩ 1,071,562	₩ (303,464)

(4) Changes in estimated total contract costs

Because of rising costs in the construction sector for the year ended December 31, 2017, the estimated total contract costs of ongoing contracts changed for the year ended December 31, 2017. Accordingly, income and amounts that impact unclaimed construction in current and future periods are as follows:

	Korean won (in thousands)				
	Change in contract amount	Change in estimated total contract cost	Effect on net income	Effect on future income	Change in unbilled construction
Construction contract	₩ 2,550,735	₩ (10,283,968)	₩ 6,919,138	₩ 5,915,565	₩ 6,919,138

The impact on current and future periods is calculated based on total estimated contract costs considering events that occurred until December 31, 2017, after the commencement of the contract and the current estimate of total contract revenue as of December 31, 2017. Estimates of total contract revenue and total contract costs may change in future periods.

24. EXPENSES BY NATURE:

Details of expenses by nature for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
Changes in inventories and purchase of inventories	₩	552,502,943	₩	406,840,784
Wages and salaries		1,763,032,720		1,778,313,774
Employee welfare		315,959,374		325,416,309
Depreciation and amortization		332,678,074		364,906,660
Advertising		2,566,415		10,243,273
Transportation		2,059,625		1,705,381
Travel		57,111,664		56,274,206
Training		62,468,244		56,647,493
Commission and service charges		407,236,507		159,642,380
Rent		147,879,714		155,335,062
Outsourcing		788,424,450		792,012,312
Communication		205,733,726		221,297,993
Taxes and dues		24,407,160		28,404,402
Logistics		3,758,694,517		3,000,981,227
Others		146,891,848		195,073,310
Total	₩	8,567,646,981	₩	7,553,094,566

25. SELLING AND ADMINISTRATIVE EXPENSES:

Details of selling and administrative expenses for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
Wages and salaries	₩	336,087,394	₩	337,982,807
Provision for severance indemnities		23,317,076		63,858,907
Employee welfare		73,447,100		76,700,292
Depreciation		22,475,234		23,599,167
Amortization		48,939,392		42,953,910
Repairs and maintenance		6,100,973		12,228,887
Supplies		2,384,081		2,116,035
Utility		1,397,923		1,919,588
Outsourcing		34,868,060		25,516,881
Travel		11,819,779		11,376,445
Communication		1,873,889		2,148,769
Insurance premium		2,127,933		2,635,871
Commission and service charges		28,517,568		23,706,448
Rental		60,592,388		57,144,483
Publication		531,067		644,477
Entertainment		3,301,762		4,388,190
Conference		1,226,783		1,890,066
Training		9,022,545		9,608,406
Recreation		1,324,705		1,505,942
Broadcasting		204,763		1,060,581
Bad debt		3,833,684		412,155
Warranty		1,762,811		2,524,910
Research and development		74,215,051		62,768,123
Miscellaneous expenses		460,727		521,818
Others		13,212,153		21,487,833
Total	₩	763,044,841	₩	790,700,991

26. OTHER OPERATING INCOME AND EXPENSES:

(1) Details of other operating income for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
Commission income	₩	9,942,305	₩	15,296,384
Gain on disposal of long-term AFS financial assets		2,883		4,263
Dividend income		18,175		10,450
Gain on disposal of property and equipment		886,997		62,266,190
Gain on disposal of intangible assets		65,017		199,963
Reversal of allowance for doubtful accounts		9,308		84,095
Reversal of provision for construction warranties		-		17,805
Others		30,291,119		11,447,481
Total	₩	41,215,804	₩	89,326,631

(2) Details of other operating expenses for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
Other bad debt expense	₩	110,623	₩	-
Loss on sale of accounts receivable		-		6,541
Donations		3,242,246		5,456,740
Loss on disposal of property and equipment		281,759		1,622,802
Loss on disposal of intangible assets		190,778		1,357,643
Impairment loss on intangible assets		14,934,093		-
Loss on disposal of long-term AFS financial assets		23,221		86,182
Expenses related to damage claim (*1)		-		1,732,241
Others		18,468,283		8,977,291
Total	₩	37,251,003	₩	19,239,440

(*1) Loss incurred from fire in Gwacheon data center for the year ended December 31, 2014.

27. FINANCE INCOME AND EXPENSE:

(1) Details of finance income and expenses for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
Finance income:				
Interest income	₩	42,723,967	₩	31,559,322
Foreign exchange gains		37,722,406		56,494,984
Gain on foreign currency translation		9,750,851		38,443,520
Total	₩	90,197,224	₩	126,497,826
Finance expense:				
Interest expense	₩	1,900,957	₩	1,352,329
Foreign exchange losses		41,616,916		61,977,134
Loss on foreign currency translation		32,568,874		12,204,090
Total	₩	76,086,747	₩	75,533,553

(2) The Group recognizes gains and losses from foreign exchange differences as finance income and expenses.

28. INCOME TAX EXPENSE:

(1) The components of income tax expense for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Current income taxes	₩ 190,806,432	₩ 227,341,997
Additional income taxes for prior years and other	(2,804,362)	(66,608)
Deferred income tax arising from temporary differences & other differences	22,321,358	10,258,634
Income tax expense	₩ 210,323,428	₩ 237,534,023

(2) The actual income tax expense on the Group's profit before tax differs from the amount that is computed using the tax calculated at the weighted-average rate applied to profits for the years ended December 31, 2017 and 2016, as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Profit before income tax	₩ 752,095,705	₩ 751,861,736
Effective tax rate (*1)	21.44%	23.25%
Income tax based on statutory tax rate	161,250,431	174,786,199
Adjustments:		
Permanent differences	2,097,406	16,161,143
Tax credit	(18,840,768)	(15,570,865)
Tax credit for which no deferred tax asset was recognized	23,202,132	15,600,401
Adjustment related to investments in subsidiaries	26,154,125	45,847,915
Others (*2)	16,460,102	709,230
Income tax expense	₩ 210,323,428	₩ 237,534,023
Effective tax rate	27.96%	31.59%

(*1) The Group's statutory tax rate is applied differently according to the tax authorities as of December 31, 2017 and 2016.

(*2) Other adjustments consist of additional income taxes for prior years and tax effect from tax rate change, etc.

(3) Changes in deferred income tax assets and liabilities resulting from the tax effect of temporary differences and others for the years ended December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)					
	Temporary differences			Deferred tax assets (liabilities)		
	Beginning	Changes	End	Beginning	Changes	End
Deferred income tax arising from temporary differences:						
Net defined benefit liabilities	₩ (226,048,326)	₩ 15,447,730	₩ (210,600,596)	₩ (54,703,695)	₩ (3,211,469)	₩ (57,915,164)
Investment in associates	(45,536,914)	5,045,709	(40,491,205)	(11,019,933)	(115,148)	(11,135,081)
Reserve for research and human resource development	(16,833,333)	12,166,666	(4,666,667)	(4,073,667)	2,790,334	(1,283,333)
Property and equipment	(61,355,151)	(1,724,330)	(63,079,481)	(14,847,947)	3,455,050	(11,392,897)
Employee welfare fund	(5,204,875)	150,675	(5,054,200)	(1,259,580)	(130,325)	(1,389,905)
Prepaid rent expenses	(7,796,417)	1,090,245	(6,706,172)	(1,886,733)	42,536	(1,844,197)
Investment in subsidiaries	(540,333,472)	(2,399,416)	(542,732,888)	(130,760,700)	(18,490,844)	(149,251,544)
Accrued expenses	82,328,415	(17,212,135)	65,116,280	19,923,476	(2,016,499)	17,906,977
Long-term accrued expense	40,521,841	(10,685,797)	29,836,044	9,806,285	(1,601,373)	8,204,912
Provision	38,585,653	(17,815,736)	20,769,917	9,337,728	(3,626,001)	5,711,727
Deposit	8,172,872	(1,027,846)	7,145,026	1,977,835	(12,953)	1,964,882
Foreign exchange gain and loss on translation	(3,284,739)	15,266,283	11,981,544	(794,907)	4,089,832	3,294,925
Taxes and dues	365,638	17,606	383,244	88,484	16,908	105,392
Others	82,626,390	49,466,181	132,092,571	15,058,439	15,794,876	30,853,315
Sub-total	(653,792,418)	47,785,835	(606,006,583)	(163,154,915)	(3,015,076)	(166,169,991)
Deferred income tax charged directly to shareholders' equity:						
Loss on valuation of long-term AFS and others	176,365,370	(31,027,853)	145,337,517	37,850,295	(3,771,166)	34,079,129

Deferred tax assets	32,572,487
Deferred tax liabilities	(164,663,349)
Net deferred tax assets (liabilities)	₩ (132,090,862)

<December 31, 2016>

	Korean won (in thousands)					
	Temporary differences			Deferred tax assets (liabilities)		
	Beginning	Changes	End	Beginning	Changes	End
Deferred income tax arising from temporary differences:						
Net defined benefit liabilities	₩ (243,052,348)	₩ 17,004,022	₩ (226,048,326)	₩ (58,818,668)	₩ 4,114,973	₩ (54,703,695)
Investment in associates	(82,300,090)	36,763,176	(45,536,914)	(19,916,622)	8,896,689	(11,019,933)
Reserve for research and human resource development	(33,566,667)	16,733,334	(16,833,333)	(8,123,133)	4,049,466	(4,073,667)
Property and equipment	(115,051,063)	53,695,912	(61,355,151)	(20,612,876)	5,764,929	(14,847,947)
Employee welfare fund	(5,344,852)	139,977	(5,204,875)	(1,293,454)	33,874	(1,259,580)
Investment in subsidiaries	(8,833,128)	1,036,711	(7,796,417)	(2,137,617)	250,884	(1,886,733)
Insurance receivables	(351,137,858)	(189,195,614)	(540,333,472)	(84,975,362)	(45,785,338)	(130,760,700)
Accrued expenses	44,559,483	37,768,932	82,328,415	10,783,395	9,140,081	19,923,476
Long-term accrued expense	27,920,777	12,601,064	40,521,841	6,756,828	3,049,457	9,806,285
Provision	36,360,513	2,225,140	38,585,653	8,799,244	538,484	9,337,728
Deposit	9,125,220	(952,348)	8,172,872	2,208,303	(230,468)	1,977,835
Foreign exchange gain and loss on translation	(2,951,425)	(333,314)	(3,284,739)	(714,245)	(80,662)	(794,907)
Taxes and dues	219,420	146,218	365,638	53,100	35,384	88,484
Others	10,021,119	72,605,271	82,626,390	8,255,148	6,803,291	15,058,439
Sub-total	(714,030,899)	60,238,481	(653,792,418)	(159,735,959)	(3,418,956)	(163,154,915)
Deferred income tax charged directly to shareholders' equity:						
Loss on valuation of long-term AFS and others	230,820,867	(54,455,497)	176,365,370	51,028,525	(13,178,230)	37,850,295

Deferred tax assets	19,560,517
Deferred tax liabilities	(144,865,137)
Net deferred tax assets (liabilities)	₩ (125,304,620)

Realization of the future tax benefits related to the deferred tax assets is dependent on many factors, including the Group's ability to generate sufficient taxable income within the period during which the temporary differences reverse, the outlook of the global economic environment and the overall future industry outlook. The Group's management periodically considers these factors in reaching its conclusion.

(4) Deferred income tax assets and liabilities credited (charged) directly to equity as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
Temporary differences:	December 31, 2017	December 31, 2016
Gain (loss) on valuation of long-term AFS financial assets	₩ 190,448	₩ (327,592)
Other capital adjustment	18,869,085	18,869,085
Remeasurement of loss on retirement benefits	143,592,506	157,823,877
	₩ 162,652,039	₩ 176,365,370
Deferred tax assets	₩ 34,079,129	₩ 37,850,295

29. CASH FLOWS FROM OPERATING ACTIVITIES:

(1) Adjustment items to net income for cash flows from operating activities and changes in operating assets and liabilities for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Net income	₩ 541,772,277	₩ 514,327,713
Adjustment items:		
Loss on foreign currency translation	32,568,874	12,204,090
Loss on disposal of AFS financial assets	23,221	86,182
Loss on disposal of investment in associates	-	142,830
Depreciation expenses	213,727,119	235,925,640
Amortization expenses	118,950,954	128,981,020
Pension expenses	106,413,553	116,041,966
Dividend income	(18,175)	(10,450)
Gain on foreign currency translation	(9,750,851)	(38,443,520)
(Reversal of) provision for project loss	(1,708,224)	(3,769,956)
Gain on disposal of AFS financial assets	(2,883)	(4,263)
Gain on disposal of investment in associates	(506,806)	(293,055)
Income tax expenses	210,323,428	237,534,023
Others	(47,613,655)	(70,646,219)
	₩ 622,406,555	₩ 617,748,288

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Changes in operating assets and liabilities:		
Increase in trade receivables	₩ (148,847,147)	₩ (114,428,485)
Decrease in other receivables	26,960,793	18,749,502
Decrease (increase) in prepaid expenses	(5,703,716)	10,839,704
Increase in prepayments	(2,551,509)	(15,992,889)
Increase (decrease) in trade payables	66,764,319	(17,902,519)
Increase(decrease) in other payables	(33,715,162)	6,181,607
Increase in accrued expenses	6,763,623	67,398,376
Changes in net defined benefit liabilities	(56,391,685)	(100,535,399)
Increase (decrease) in advances received	(4,412,662)	4,873,606
Decrease in withholdings	(2,810,123)	(1,660,306)
Others	(41,312,612)	20,145,565
	(195,255,881)	(122,331,238)
Cash flows from operating activities	₩ 968,922,951	₩ 1,009,744,763

(2) Significant transactions not affecting cash flows for the years ended December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Changes in gain on valuation of AFS financial assets	₩ 2,896,088	₩ 7,888
Transfer of construction in progress	18,699,535	3,663,300
Write-off of accounts receivable and long-term non-trade receivables by offset of allowance for doubtful accounts	4,425,126	207,925
Transfer of long-term loans	402,956	1,416,265
Changes in other payables in connection with acquisition of property and equipment	6,626,647	-
Changes in other payables in connection with acquisition of intangible assets	336,779	-

(3) Adjustments of liabilities from financing activities for the year ended December 31, 2017, are as follows:

	Korean won (in thousands)			
	Beginning balance	Transfer	Cash flows	Ending balance
Short-term borrowings	₩ 2,608,483	₩ -	₩ (1,788,187)	₩ 820,296
Current portion of long-term borrowings	2,464,461	1,615,271	(4,079,732)	-
Long-term borrowings	1,615,271	(1,615,271)	-	-
Total	₩ 6,688,215	₩ -	₩ (5,867,919)	₩ 820,296

30. FINANCIAL RISK MANAGEMENT:

The Group is exposed to credit risk, liquidity risk and market risk. Market risk arises from currency risk, interest rate risk and fair value risk associated with investments. The Group has a risk management program in place to monitor and actively manage such risks.

The Group's management team is responsible for financial risk management. Also, the financial risk management officers develop, evaluate and estimate the financial risk, and hedge the risk exposures in cooperation with the business units of the Group and domestic and overseas subsidiaries.

The Group’s financial assets that are under financial risk management are composed of cash and cash equivalents, short-term financial instruments, AFS financial assets, trade and other receivables and other financial assets. The Group’s financial liabilities under financial risk management are composed of trade and other payables and others.

(1) Market risk

1) Foreign exchange risk

The Group is exposed to foreign exchange risk due to revenues and expenses arising from foreign currency transactions through global business activities. These transactions are mainly conducted in USD, EUR, JPY and other foreign currencies.

To minimize foreign exchange risk arising from operating activities, the Group's foreign exchange management policy requires all normal business transactions, such as import-export, to be in functional currency or cash inflows in foreign currencies to match up with cash outflows in foreign currencies. Foreign exchange risk for inevitably occurring foreign exchange positions is managed in accordance with procedures and regulations prescribed in advance.

The Group's foreign currency risk management policy also defines foreign exchange risk, measurement period, controlling responsibilities and management procedures. The Group restricts all speculative foreign exchange transactions and operates a system to manage receivables and payables denominated in foreign currency. The Group's global foreign currency management system monitors, evaluates, manages and reports the Group's foreign exchange risk (Net assets in foreign currencies = Assets in foreign currencies – Liability in foreign currencies).

The carrying amounts of financial assets and liabilities denominated in foreign currency held by the Group as of December 31, 2017 and 2016, is as follows:

	Korean won (in thousands)			
	Assets		Liabilities	
	December 31, 2017	December 31, 2016	December 31, 2017	December 31, 2016
USD	₩ 457,153,559	₩ 372,218,060	₩ 214,596,600	₩ 113,158,934
EUR	52,713,955	62,630,079	7,491,329	17,997,986
JPY	2,938,838	1,670,496	330,998	182,274

In addition to the major currencies, the Group has other financial assets and liabilities denominated in foreign currency amounting to ₩89,568 million and ₩27,702 million as of December 31, 2017, respectively, and amounting to ₩45,178 million and ₩5,649 million as of December 31, 2016 respectively.

Foreign currency exposure to financial assets and liabilities of a 5% currency rate change against the Korean won as of December 31, 2017 and 2016, is presented below. The 5% represents reasonably possible changes in exchange rates by applying sensitivity when foreign exchange rate risk is internally reported to key management personnel. Sensitivity analysis includes only monetary items to be paid denominated in foreign currencies. Foreign currency translations are adjusted by assuming a 5% change in foreign exchange rates at the end of the reporting period.

The effect of foreign currency changes to the Group's equity is calculated by the sum of net effect of exchange rate fluctuations of the Korean won against foreign currencies.

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
	Increase	Decrease	Increase	Decrease
Financial assets	₩ 30,118,728	₩ (30,118,728)	₩ 24,084,840	₩ (24,084,840)
Financial liabilities	12,506,071	(12,506,071)	6,849,417	(6,849,417)
Net effect	₩ 17,612,656	₩ (17,612,656)	₩ 17,235,423	₩ (17,235,423)

2) Stock price risk

The Group's investment portfolio consists of investments in listed and unlisted securities using direct and indirect investment vehicles for strategic purposes. The Group has no listed securities except for investments in subsidiaries and investments in associates as of December 31, 2017 and 2016 (see Note 11).

3) Interest rate risk

The Group is exposed to fair value risk of statements of financial position items due to changes in market price rates, and is exposed to interest rate risk, such as changes in cash flows of interest income and expense arising from investing and financing activities, including investment risk. The Group's position with regard to interest rate risk exposure is mainly driven by interest-bearing deposits and variable-rate borrowings. The Group establishes the policy to manage the uncertainty related to interest rate fluctuations and minimize interest expenses.

In order to avoid interest rate risk, the Group maintains minimum external borrowings by facilitating cash pooling systems on regional and global basis. The Group manages exposed interest rate risk via periodic monitoring and planning.

If the interest rates were 1% higher or 1% lower than the current interest rates, the Group's net income would decrease/increase by ₩8,303 thousand, primarily due the interest rate risk of variable-rate borrowings. This analysis assumes that all other variables remain constant.

(2) Credit risk

Credit risk arises during the normal course of transactions and investing activities, where clients or other party fails to discharge an obligation. The Group monitors and sets the customer's and counterparty's credit limit on a periodic basis based on the counterparty's financial conditions, default history and other important factors.

Credit risk also arises from cash and cash equivalents, savings and derivative instrument transactions with financial institutions. To minimize such risk, the Group transacts only with banks that have strong international credit rating, and all new transactions with financial institutions with no prior transaction history are approved, managed and monitored by the Group's finance team.

Book value of financial assets represents the maximum exposure to credit risk. The Group's maximum exposure to credit risk as of December 31, 2017 and 2016, is as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Financial guarantee agreement (*1)	₩ 10,000,000	₩ 10,000,000

(*1) The Group's maximum exposure in relation to financial guarantee contracts is the maximum amount to be paid by the Group if warranties are claimed.

Financial assets exposed to credit risk, excluding financial guarantee contracts, are excluded from disclosure because the carrying amounts best represent maximum exposure to credit risk.

(3) Liquidity risk

It is important for the Group to maintain adequate level of liquidity considering the Group's large-scale investments. The Group manages its liquidity risk to maintain adequate liquidity by constantly managing periodic projected cash flows through estimated required cash levels and cash flow management.

Accordingly, the Group estimates and manages required working capital, including required cash and cash equivalents. Funding is deposited and procured in banks at an amount greater than a predetermined level.

Meanwhile, the Group mitigates liquidity risk by contracting with financial institutions with respect to bank overdrafts or banking facility agreement.

Also, in the event of large investments in facilities, the Group manages liquidity risk using available cash reserves or long-term borrowings.

The following table shows in detail the contractual maturities of non-derivative financial liabilities. This table was prepared on the basis of earliest maturity date based on undiscounted cash flows of financial liabilities and includes all cash flows of principal and interest. Contractual maturity is based on the earliest date the Group could be required to make payment.

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
	Less than 1 year	1 year-5 years	Less than 1 year	1 year-5 years
Financial liabilities:				
Trade and other payables	₩ 511,045,515	₩ -	₩ 490,806,908	₩ -
Accrued expenses	423,284,547	38,608,592	462,285,528	35,691,680
Borrowings and corporate bond	830,296	-	5,072,944	1,625,271
Other financial liabilities	5,828,950	-	10,609,474	-
	940,989,308	38,608,592	968,774,854	37,316,951
Financial guarantee agreement	10,000,000	-	10,000,000	-
Total	₩ 950,989,308	₩ 38,608,592	₩ 978,774,854	₩ 37,316,951

(4) Capital risk management

The Group's capital management objective is to maintain an option capital structure. The Group uses the debt-to-equity ratio as an indicator to manage capital. This ratio is calculated by dividing total liabilities with total equity.

There was no change in the Group's capital risk management policy in comparison with the year ended December 31, 2016.

The debt-to-equity ratio of the Group as of December 31, 2017 and 2016, is as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Total debt	₩ 1,558,331,443	₩ 1,550,879,764
Total equity	5,719,429,437	5,291,124,095
Debt-to-equity ratio	27.25%	29.31%

31. RELATED-PARTY TRANSACTIONS:

(1) The Group's related parties as of December 31, 2017 and 2016, are as follows:

	Ownership (%)	
	December 31, 2017	December 31, 2016
Entity with significant influence over the Group:		
Samsung Electronics Co., Ltd. and its subsidiaries	-	-
Associates:		
DongA.com	18.97	18.97
Dunet, Inc.	18.01	18.01
Korea Information Certificate Authority, Inc.	6.42	7.42
SERI Technologies, Inc.	29.00	29.00
iMarket Asia Co., Ltd.	40.56	40.56
Other related parties (*1) :		
Samsung SDI Co., Ltd. and etc.	-	-

(*1) A large-scale business group affiliation (Other related parties) does not corresponded to the related parties defined in paragraph 9 of K-IFRS 1024. However, a large-scale business group affiliation designated by the Fair Trade Commission is a company classified as related party and in accordance with the resolution of the Securities and Futures Commission, is classified as a related party in accordance with the substantive relationship stipulated in paragraph 10 of K-IFRS 1024.

(2) Revenues and purchase transactions with related parties for the years ended December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)	
	Revenues	Purchase (*1)
Entities with significant influence over the Group:		
Samsung Electronics Co., Ltd.	₩ 2,160,504,724	₩ 40,396,945
Samsung Display Co., Ltd.	195,563,773	10,765
Samsung Electronics Logitech Corp.	21,078,868	21,352,705
Samsung Electronics Vietnam	182,088,689	2,499
Samsung Electronica da Amazonia	300,150,388	1,557,277
Samsung (China) Semiconductor Co., Ltd.	95,101,093	-
Samsung Electronics Slovakia	71,691,564	54,268
Samsung Electronics Huizhou	146,171,494	9,086
Thai Samsung Electronics	242,384,050	773,773
Samsung Electronics Indonesia	73,519,399	136,862
Others (*2)	3,347,888,069	30,876,613
Associates:		
SERI Technologies, Inc.	1,122	1,704,834
Dunet, Inc.	-	18,276

	Korean won (in thousands)			
	Revenues		Purchase (*1)	
iMarket Asia Co., Ltd.		227,639		113,011
Korea Information Certificate Authority, Inc.		119,548		326,002
Total	₩	6,836,490,420	₩	97,332,916

(*1) The Group purchased machinery and other equipment of ₩9,451 million from Samsung Electronics Co., Ltd. for the year ended December 31, 2017.

(*2) Others consist of the subsidiaries of Samsung Electronics Co., Ltd.

<December 31, 2016>

	Korean won (in thousands)			
	Revenues		Purchase (*1)	
Entities with significant influence over the Group:				
Samsung Electronics Co., Ltd.	₩	1,617,293,961	₩	28,437,761
Samsung Display Co., Ltd.		172,119,560		9,899
Samsung Electronics Logitech Corp.		9,820,293		34,019,796
Samsung Electronics Vietnam		226,330,616		89,236
Samsung Telecommunications America		57,897		22,430
Samsung Electronica da Amazonia		260,125,265		397,179
Samsung (China) Semiconductor Co., Ltd.		109,194,096		-
Samsung Electronics Slovakia		99,101,361		6,222
Samsung Electronics Huizhou		174,771,234		61,662
Thai Samsung Electronics		183,439,467		295,283
Samsung Electronics Indonesia		72,101,500		242,579
Others (*2)		3,113,614,573		23,831,654
Associates:				
SERI Technologies, Inc.		7,251		748,380
Dunet, Inc.		-		2,277
iMarket Asia Co., Ltd.		266,031		111,104
Korea Information Certificate Authority, Inc.		97,562		323,500
Total	₩	6,038,340,667	₩	88,598,962

(*1) The Group purchased machinery and other equipment of ₩3,451 million from Samsung Electronics Co., Ltd. for the year ended December 31, 2016.

(*2) Others consist of the subsidiaries of Samsung Electronics Co., Ltd.

Revenues and purchase transactions with other related parties for the years ended December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)			
	Revenues		Purchase	
Other related parties:				
Samsung Fire & Marine Insurance Co., Ltd.	₩	191,331,546	₩	12,775,163
Samsung Life Insurance Co., Ltd.		214,604,219		25,283,555
Samsung SDI Co., Ltd.		141,772,373		185,486
Others		837,294,533		88,178,478
Total	₩	1,385,002,671	₩	126,422,682

<December 31, 2016>

	Korean won (in thousands)			
	Revenues		Purchase	
Other related parties:				
Samsung Fire & Marine Insurance Co., Ltd.	₩	249,820,606	₩	14,173,960
Samsung Life Insurance Co., Ltd.		244,581,206		33,325,475
Samsung SDI Co., Ltd.		131,593,248		92,500
Others (*1)		788,469,497		96,727,309
Total	₩	1,414,464,557	₩	144,319,244

(*1) Others include the Group’s diposal of its land and buildings in Teheran-ro 212, Gangnam-gu, Seoul at ₩ 126,000 million upon resolution at the board of directors’ meeting held on January 22, 2016.

(3) Receivables from and payables to related parties as of December 31, 2017 and 2016, are as follows:

	Korean won (in thousands)			
	December 31, 2017		December 31, 2016	
	Receivables	Payables	Receivables	Payables
Entities with significant influence over the Group:				
Samsung Electronics Co., Ltd.	₩ 483,784,259	₩ 45,599,123	₩ 409,499,596	₩ 31,712,301
Samsung (China) Semiconductor Co., Ltd.	31,337,715	3,967,647	20,090,746	1,765,447
Samsung Telecommunications America	-	-	4,437,636	-
Samsung Suzhou LCD	1,033,940	69,554	1,659,519	6,745
Samsung Electronics (Shandong) Digital Printing	4,769,725	12,045	3,860,815	722,905
Samsung Electronica da Amazonia	16,191,793	2,596,298	8,608,311	2,433,273
Samsung Display Co., Ltd.	48,518,919	1,685,980	40,734,952	981,092
Samsung Electronics Vietnam	10,624,407	1,690,058	10,731,686	622,574
Samsung Electronics Huizhou	8,033,457	342,657	9,163,573	208,158
Samsung Electronics Indonesia	110,607,257	563,291	5,498,990	212,862
Samsung India Electronics	22,756,350	397,627	19,934,122	163,655
Thai Samsung Electronics	15,666,883	1,476,457	8,538,548	1,373,026
Samsung Electronics Benelux	648,194	207,209	1,064,572	60,020
Others (*1)	384,712,872	28,856,043	348,724,439	25,086,181
Associates:				
SERI Technologies, Inc.	-	500,513	950	-
Dunet, Inc.	-	280	-	280
iMarket Asia Co., Ltd.	16,937	15,041	62,786	3,598
Korea Information Certificate Authority, Inc.	8,291	825	11,949	1,375
Total	₩ 1,138,710,999	₩ 87,980,648	₩ 892,623,190	₩ 65,353,492

(*1) Others consist of the subsidiaries of Samsung Electronics Co., Ltd.

Receivables from and payables to other related parties as of December 31, 2017 and 2016, are as follows:

<December 31, 2017>

	Korean won (in thousands)	
	Receivables	Payables
Other related parties:		
Samsung Fire & Marine Insurance Co., Ltd.	₩ 106,230,327	₩ 107,940
Samsung Life Insurance Co., Ltd.	150,586,396	75,989
Samsung SDI Co., Ltd.	22,309,449	4,564,221
Others	176,600,713	30,457,646
Total	₩ 455,726,885	₩ 35,205,796

<December 31, 2016>

	Korean won (in thousands)	
	Receivables	Payables
Other related parties:		
Samsung Fire & Marine Insurance Co., Ltd.	₩ 146,456,372	₩ 1,022,472
Samsung Life Insurance Co., Ltd.	125,248,090	157,334
Samsung SDI Co., Ltd.	25,744,108	852,917
Others	225,873,396	43,159,500
Total	₩ 523,321,966	₩ 45,192,223

(4) Key management compensation

Key management compensation for the Group's registered executives recognized as expenses for the years ended December 31, 2017 and 2016, is as follows:

	Korean won (in thousands)	
	2017	2016
Short-term benefits	₩ 3,131,735	₩ 2,916,298
Other long-term benefits	1,878,402	2,578,947
Provision for severance indemnities	514,221	923,357
	₩ 5,524,358	₩ 6,418,602

Key management refers to the registered directors who have significant control and responsibilities over the Group's planning, operating and control activities.

(5) The Group recognized allowance for doubtful accounts of ₩1 million with respect to receivables from related parties as of December 31, 2017, and reversed ₩14 million of allowance for doubtful accounts recognized for the year ended December 31, 2017.

32. EARNINGS PER SHARE:

(1) Basic earnings per share for the years ended December 31, 2017 and 2016, are as follows:

	Korean won	
	December 31, 2017	December 31, 2016
Basic earnings per share	₩ 6,856	₩ 5,997

(2) Basic earnings per share

Net income attributable to the owners of the Group and the weighted-average number of shares outstanding used in calculating basic earnings per share are as follows:

	Korean won (in thousands)	
	December 31, 2017	December 31, 2016
Net income attributable to the owners of the Group	₩ 530,347,611	₩ 463,858,324

	Number of shares	
	December 31, 2017	December 31, 2016
Weighted-average number of common shares outstanding (shares)	77,350,186 shares	77,350,186 shares

(3) Diluted earnings per share and basic earnings per share are identical as the Group did not issue potentially dilutive securities.

33. APPROVAL OF CONSOLIDATED FINANCIAL STATEMENTS:

The consolidated financial statements of the Group as of and for the year ended December 31, 2017, to be submitted to the ordinary shareholders' meeting on March 23, 2018, were finally authorized at the board of directors' meeting on February 2, 2018.

34. EMISSION RIGHTS AND LIABILITIES:

(1) The quantity of the emission allowances allocated free of charge for the three-year plan period from 2015 to 2017 is as follows:

	Quantity of emission allowances allocated free of charge	
2015	KAU	46,217
2016		46,756
2017		43,514
Total	KAU	136,487

(2) The changes in the quantity of allowances and carrying value for the years ended December 31, 2017 and 2016, are as follows:

	KAU				Korean won (in thousands)			
	Quantity				Book value			
	2017		2016		2017		2016	
Beginning	KAU	20,378	KAU	-	₩	364,766	₩	-
Allocated		49,772		45,322		-		-
Purchase		-		25,105		-		449,379
Applied		(42,421)		(50,049)		(4,851)		(84,613)
Ending	KAU	27,729	KAU	20,378	₩	359,915	₩	364,766

No emission allowances are provided as collateral for the year ended December 31, 2017. The estimated quantity of emission produced for the year ended December 31, 2017, is 42,179 KAU.