Journal of Infrastructure, Policy and Development 2024, 8(9), 7268.
https://doi.org/10.24294/jipd.v8i9.7268

Article

The impact of financial literacy and financial management behavior on recognition of startup opportunity

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CITATION

Kang GL, Park CW. (2024). The impact of financial literacy and financial management behavior on recognition of startup opportunity. Journal of Infrastructure, Policy and Development. 8(9): 7268. https://doi.org/10.24294/jipd.v8i9.7268

ARTICLE INFO

Received: 20 June 2024
Accepted: 26 July 2024
Available online: 6 September 2024

Abstract: Financial literacy is an essential life skill today and plays a crucial role in business success. This study examined the relationship between college students' financial literacy, financial management behavior, and entrepreneurial opportunity recognition. A survey was conducted among college students in the Busan and Gyeongnam regions, and a total of 272 responses were analyzed using SPSS 28.0. The results showed that financial literacy partially positively affects financial management behavior. Furthermore, financial management behavior positively influences entrepreneurial opportunity recognition. Financial management behavior partially mediates the relationship between financial literacy and entrepreneurial opportunity recognition. Improving the financial literacy of college students during adolescence serves as a motivation for entrepreneurship and significantly impacts their exploration and practice of various income activities to achieve their expected future living standards. The study's findings indicate that for potential entrepreneurs, recognizing and promoting entrepreneurship as a source of innovation and growth requires incorporating financial literacy and desirable financial management behavior education into university curricula.

Keywords: financial literacy; financial management behavior; recognition of startup opportunity

1. Introduction

The rapid development of science and technology and the extension of average life expectancy have significantly changed the industrial structure and employment market conditions. Nowadays, people increasingly seek diverse career paths and consider entrepreneurship as a career to maintain continuous income activities. University students are in a critical period of exploring career directions and preparing for economic independence. This indicates the importance of systematic and long-term decision-making to select various career paths and achieve financial goals during youth. In an era of super-aging, it is becoming increasingly important to seek diverse income sources and engage in systematic and long-term financial management behaviors to prepare for life decades ahead.

People with high financial literacy are relatively better equipped to cope with financial crises, such as income loss or unexpected expenses. This ability can be attributed to their higher will to set, regularly review, and achieve long-term financial goals to reach their expected standard of living in the future (Kang and Park, 2021). Financial literacy indicates potential for more knowledgeable and responsible economic decision-making (Bae et al., 2022), thereby reducing costs related to financial illiteracy and enhancing social welfare in the long term. Therefore, learning financial literacy and proper financial management behaviors in schools can be seen as crucial for university students' preparation for social life and related income activities or employment (Langdal et al., 2022).

Today, long-term financial management behavior requires more complex decision-making and more planning for the future. This suggests that financial literacy during adolescence is likely to influence entrepreneurial thinking (Wagner and Walstad, 2019). Against this background, the purpose of this study is to examine how financial literacy and financial management behavior among college students affect the recognition of startup opportunities.

2. Theoretical background

2.1. Financial literacy

Financial literacy is defined as the overall understanding and behavior patterns necessary for rational and sound financial life, encompassing financial knowledge, behavior, and attitudes. Financial knowledge refers to the basic knowledge that helps consumers compare financial products or services and make informed financial decisions. Financial behavior involves actions related to financial planning and budgeting, and choosing financial products based on information. Financial attitudes reflect preferences for consumption and savings, present and future, and the perceived value of money (Bank of Korea, 2023).

The OECD's International Network on Financial Education (INFE) defines financial literacy as a combination of cognition, knowledge, skills, attitudes, and behaviors necessary to achieve financial well-being through sound financial decision-making. It means improving individual and societal financial well-being through effective financial decision-making and participating in economic activities with the necessary skills, motivation, and confidence (OECD/INFE, 2012).

The Bank of Korea (2023) presented the results of the "2022 National Financial Literacy Survey" based on INFE's standard methodology. The survey showed that financial literacy slightly increased to 66.5 points compared to the 2022 survey. However, activities related to long-term financial planning were weak, and there was a tendency to rely on recommendations from friends, family, and acquaintances rather than professional information when selecting financial products and services. Particularly, people in their twenties (aged 18–29) had relatively high financial knowledge scores of 74.9 but low financial attitude scores of 48.9, indicating the need to strengthen early financial and economic education for youth to foster them as economic agents leading sound financial lives.

2.2. Financial management behavior

Financial management behavior involves establishing action plans, implementing, reviewing, and evaluating them to increase and preserve current and future income to achieve personal or household financial goals. Financial management includes income management, tax management, expenditure management, debt management, investment management, and risk management behaviors (Hong and Lee, 1999).

Financial management behavior encompasses evaluating the current financial status, setting long- and short-term financial goals, formulating specific plans, executing them efficiently, and conducting regular reviews and adjustments (Cha, 2007). As financial management behavior is a lifelong process, desirable financial management behaviors can significantly impact long-term quality of life. Bernheim et al. (2001) provided the first systematic evidence on the long-term behavioral effects of high school financial curriculum mandates, finding that mandated education significantly increased exposure to financial education and ultimately raised the savings and wealth accumulation rates during adulthood. This suggests that financial education can be a powerful tool for stimulating personal savings. Thus, financial literacy and financial management behavior education in universities are crucial (Bae et al., 2022; Choi and Koo, 2016).

2.3. Recognition of startup opportunity

Opportunity recognition is influenced by cognitive factors such as personal vision, knowledge, skills, and abilities. For entrepreneurs, opportunities involve situations where good products or services, raw materials, and operating methods can be sold at higher prices than production costs (Casson, 1982). It can also describe situations where attractive, sustainable, and timely products or services can be launched to add or create value in market transactions (Timmons, 1994). Identifying such opportunities requires the ability to understand the relationship between information and the market through the complementarity of existing and newly acquired information (Shane and Venkataraman, 2000; Wasdani and Mathew, 2014).

Recognition of startup opportunity involves perceiving potential new revenue through the establishment and formation of new ventures or significant improvements in existing ones (Singh et al., 2001). It is a continuous process supporting pre-startup, startup, survival, and growth of ventures, encompassing recognition, discovery, and creation rather than being a one-time activity (Singh et al., 2001). Given that an individual's potential for opportunity recognition significantly influences entrepreneurial decisions, Kang et al. (2024) suggested that financial literacy and desirable financial management behaviors are significant factors affecting entrepreneurial intention.

2.4. Relationship between variables in prior research

Financial education plays a crucial role in business success. Financial literacy makes economic concepts easier to understand and helps in making responsible financial decisions. Financial literacy and desirable financial management behavior equip individuals with the ability to have a long-term vision and plan to implement it (Abad-Segura et al., 2019).

Previous studies on the relationship between financial literacy and financial management behavior generally indicate that higher financial literacy leads to more efficient financial management behaviors (Baek et al., 2004; Lee and Joo, 2013). Kim and Yang (2016) confirmed that improving financial literacy leads to desirable financial management behaviors. Choi and Koo (2016) also explained that higher financial literacy leads to desirable financial management behaviors, with financial attitudes and behaviors significantly affecting financial management behaviors, even though the impact of financial knowledge was not significant.

Entrepreneurs are the source of innovation and growth, but their ability to achieve such outcomes is fundamentally intertwined with their ability to make correct financial decisions (Calcagno et al., 2020). Retzmann and Seeber (2016) stated that individuals who have received economic education are capable of making subjective financial decisions, making rational financial choices, and pursuing legitimate profits while considering the interests and values of others within economic interactions. Therefore, financial education as part of school education should aim to cultivate these goals and core competencies in individuals, organizations, and society.

Based on prior research, it is concluded that financial literacy and financial management behavior positively impact Recognition of startup opportunity due to the increased will to set, regularly check, and adjust long-term financial goals to achieve the expected standard of living in the future (Kang and Park, 2021; Langdal et al., 2022; Retzmann and Seeber, 2016).

3. Research design

3.1. Research model and hypothesis setting

This study aimed to confirm the impact of university students' financial literacy and financial management behavior on Recognition of startup opportunity. The need for continuous income activities to prepare for life several or dozens of years later is emphasized due to technological advancements, increased life expectancy, and changes in the employment environment. This highlights the importance of systematic and long-term decision-making to select various career paths and achieve financial goals during youth. Higher financial literacy leads to more efficient financial management behaviors (Lee and Joo, 2013). Entrepreneurs are the source of innovation and growth, and their ability to achieve outcomes is fundamentally intertwined with their ability to make correct financial decisions. Hence, financial literacy is essential for making such decisions (Calcagno et al., 2020). Bae et al. (2022) demonstrated that early financial education improves financial literacy and responsible economic decision-making potential.

Based on previous research, a positive relationship is expected between financial literacy, financial management behavior, and Recognition of startup opportunity. The research model and hypotheses were set as shown in **Figure 1**.

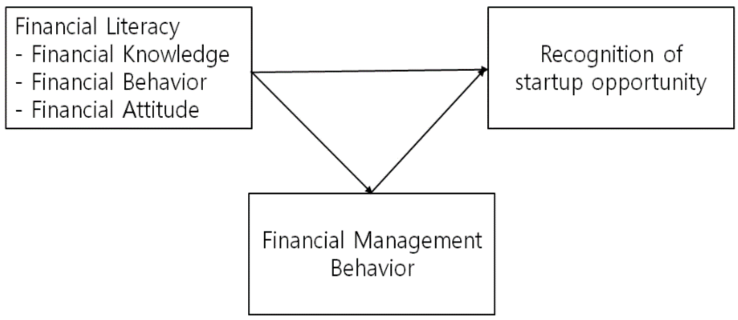

Figure 1. Research model

Hypothesis 1: Financial literacy will have a significant positive effect on financial management behavior.

Hypothesis 1-1: Financial knowledge will have a significant positive effect on financial management behavior.

Hypothesis 1-2: Financial behavior will have a significant positive effect on financial management behavior.

Hypothesis 1-3: Financial attitude will have a significant positive effect on financial management behavior.

Hypothesis 2: Financial literacy will have a significant positive effect on Recognition of startup opportunity.

Hypothesis 2-1: Financial knowledge will have a significant positive effect on Recognition of startup opportunity.

Hypothesis 2-2: Financial behavior will have a significant positive effect on Recognition of startup opportunity.

Hypothesis 2-3: Financial attitude will have a significant positive effect on Recognition of startup opportunity.

Hypothesis 3: Financial management behavior will have a significant positive effect on Recognition of startup opportunity.

Hypothesis 4: Financial management behavior will mediate the relationship between financial literacy and Recognition of startup opportunity.

Hypothesis 4-1: Financial management behavior will mediate the relationship between financial knowledge and Recognition of startup opportunity.

Hypothesis 4-2: Financial management behavior will mediate the relationship between financial behavior and Recognition of startup opportunity.

Hypothesis 4-3: Financial management behavior will mediate the relationship between financial attitude and Recognition of startup opportunity.

3.2. Measurement tools composition and data collection

The sample for this study was collected from university students in the Busan area using both Google web and offline questionnaires. Data collection took place over 30 days, from 15 November 2023, to 15 December 2023. A total of 280 responses were collected, with 8 responses removed due to missing data, leaving 272 responses for final analysis. The measurement tools consisted of 21 items using a 5-point Likert scale. Collected data was analyzed using SPSS 28.0 program for reliability analysis, validity analysis, multiple regression analysis, and mediation regression analysis. The mediation effect was verified using the Sobel-test. The operational definitions of measured variables are as shown in **Table 1**.

Table 1. Operational definitions of measured variables.

Factor	Operational Definitions of Variables		Researcher
Financial Literacy	Financial Knowledge	Large potential profits mean large potential losses as well. Generally, diversifying investments across various stocks can reduce investment risk. High inflation means rapidly increasing living costs.	OECD/INFE(2012), Bank of Korea (2023)
	Financial Behavior	Regular saving or investing. Interest in saving or investment methods and exploring various information. Interest in changes in financial environment like interest rates or exchange rates and efforts to apply these to personal asset management.	
	Financial Attitude	Checking financial affordability before purchasing goods. Setting long-term financial goals and working towards achieving them. Satisfaction from saving or investing for the future rather than spending money now.	

Financial Management Behavior	Nowadays, it's hard to live comfortably with just one job. Multiple jobs are essential for modern living. Interested in side jobs that can earn money. Aiming to become a successful 'pro dual-jobber'.	Choi and Koo(2016), Cha, K. W.(2023)
Recognition of startup opportunity	Confidence in succeeding if starting a business. Seeking ideas for starting a business. Thinking about promising markets and business ideas. Contemplating how to turn talents or hobbies into a career.	Kang and Park(2021)

Table 2 shows the survey composition and response method.

Table 2. Survey composition and response method.

Independent variable	**Financial literacy**	**Financial Knowledge**	**3 questions**	5-point Likert scale
		Financial Behavior	**3 questions**	
		Financial Attitude	**4 questions**	
Parameters	Financial Management Behavior		4 questions	
Dependent variable	Recognition of startup opportunity		4 questions	
demographic			3 questions	
total			21 questions	

4. Empirical analysis results

4.1. Data analysis method

The statistical processing of this study was conducted using the SPSS 28.0 statistical program. Reliability analysis, factor analysis, and correlation analysis were performed on the measurement items. Multiple regression analysis was conducted to analyze the impact of financial literacy and financial management behavior on the perception of entrepreneurial opportunities. Additionally, mediation regression analysis was conducted to analyze the mediating effect of entrepreneurship between financial literacy and perception of entrepreneurial opportunities, and its significance was verified using the Sobel test.

4.2. Demographic characteristics

Table 3 shows the general characteristics of the 272 samples.

Table 3. General characteristics of the sample.

Sortation		Frequency (Number)	Percentage (%)
Gender	Man	210	77.2
	Woman	62	22.8
Start-up experience	I do	68	25.0
	I don't	204	75.0
Major field	Social sciences	25	9.2
	Natural science	33	12.2
	Engineering field	175	64.6
	Others	38	14.0
Number of frequencies	272		

4.3. Reliability, factor analysis, descriptive statistics, and correlation analysis

The factor analysis results showed that the factor loadings for each factor were above 0.5, and the KMO value was above 0.8. The Cronbach's α coefficients, which measure reliability, were all above 0.7, indicating that the items used to measure the variables in this study are statistically valid and consistent. The results of reliability and factor analysis of measurement items were shown in **Table 4** below.

Table 4. Reliability and factor analysis of measurement items.

item	Factor analysis					reliability analysis	
	Financial Knowledge	**Financial Behavior**	**Financial Attitude**	**Financial Management Behavior**	**Recognition of startup opportunity**	**Cronbach's alpha if item Delete**	**Cronbach's alpha**
Financial Knowledge 1	0.721					0.710	0.706
Financial Knowledge 3	0.583					0.718	
Financial Knowledge 2	0.515					0.717	
Financial Behavior 1		0.787				0.668	
Financial Behavior 2		0.764				0.666	
Financial Behavior 3		0.615				0.651	
Financial Attitude 1			0.717			0.687	
Financial Attitude 3			0.691			0.692	
Financial Attitude 2			0.596			0.659	
Financial Attitude 4			0.587			0.664	
Financial Management Behavior 2				0.814		0.732	0.824
Financial Management Behavior 3				0.802		0.769	
Financial Management Behavior 1				0.777		0.794	
Financial Management Behavior 4				0.719		0.809	
Recognition of startup opportunity2					0.844	0.775	0.858
Recognition of startup opportunity3					0.825	0.780	
Recognition of startup opportunity1					0.811	0.813	
Recognition of startup opportunity4					0.636	0.889	
KMO	0.817						
Eigen-Value	1.153	1.217	1.696	2.150	4.987		
Variance (%)	6.405	6.762	9.420	11.944	27.705		

The results of the descriptive statistical analysis for each factor are shown in **Table 5**.

Table 5. Descriptive statistical analysis results by factor.

sortation	average	Standard deviation	N
Financial Knowledge	4.3162	0.56380	272
Financial Behavior	4.0285	0.66811	272
Financial Attitude	3.3833	0.83452	272
Financial Management Behavior	3.3805	0.91773	272
Recognition of startup opportunity	3.0974	1.00376	272

The correlation analysis between financial literacy, financial management behavior, and recognition of startup opportunity are shown in **Table 6**. The correlation analysis results showed a significant positive correlation between financial management behavior and financial behavior and financial attitude. Financial behavior and financial attitude had a high correlation with the perception of entrepreneurial opportunities. There was no correlation between financial knowledge and financial management behavior, interpreted as due to the ease of access to digital financial information for university students, financial knowledge is high but it takes time to acquire desirable financial management behaviors as independent economic agents. There was a high correlation between financial management behavior and perception of entrepreneurial opportunities, suggesting a significant impact of financial literacy, financial management behavior, and perception of entrepreneurial opportunities.

Table 6. Correlation analysis.

Sortation	Financial Knowledge	Financial Behavior	Financial Attitude	Financial Management Behavior	Recognition of startup opportunity
Financial Knowledge	1				
Financial Behavior	0.194**	1			
Financial Attitude	0.102	0.444**	1		
Financial Management Behavior	0.111	0.167**	0.227**	1	
Recognition of startup opportunity	0.048	0.311**	0.493**	0.427**	1

**$p < 0.01$.

4.4. Hypothesis testing results

4.4.1. Regression analysis results

Table 7 shows the results of the regression analysis on the impact of financial literacy and financial management behavior on recognition of startup opportunity.

Table 7. Regression analysis of the impact of financial literacy and financial management behavior on recognition of startup opportunity.

Sortation		Non-Standardized Coefficient		Standardized Coefficient	*t*	sig.	Perfect Multicollinearity Statistics	
Dependent Variable	Independent Variables	B	Standard Error	*β*			Tolerance Limit	VIF
Financial Management	Financial Knowledge	0.128	0.098	0.078	1.300	0.195	0.962	1.039

Behavior	Financial Behavior	0.093	0.092	0.068	1.012	0.313	0.781	1.281
	Financial Attitude	0.208	0.073	0.189	2.871	0.004	0.803	1.245
R = 0.251 R2 = 0.063 R2adj = 0.053 F = 6.013 sig. < 0.001								
Recognition of startup opportunity	Financial Knowledge	−0.036	0.096	−0.020	−0.381	0.704	0.962	1.039
	Financial Behavior	0.179	0.090	0.119	1.995	0.047	0.781	1.281
	Financial Attitude	0.532	0.071	0.442	7.505	< 0.001	0.803	1.245
R = 0.427 R2 = 0.182 R2adj = 0.179 F = 60.044 sig.< 0.001								
Recognition of startup opportunity	Financial Management Behavior	0.467	0.060	0.427	7.749	< 0.001	1.000	1.000
R = 0.766 R2 = 0.587 R2adj = 0.582 F = 119.306 sig.< 0.001								

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

4.4.2. Mediation regression analysis results

The results of the analysis of the mediating effect of financial management behavior between financial literacy and recognition of startup opportunity are shown in **Table 8**. In addition, the results of the Sobel test to verify the significance of the mediating effect are also shown.

Table 8. Mediating effect of financial management behavior between financial literacy and recognition of startup opportunity.

Independent/Parameter/Dependent Variables	Mediation Effect Verification Stage	Standardized Beta Values	*t*-Value	*p*-Value	R2	Sobel-Test	
						Z	*p*
Financial Knowledge Financial Management Behavior Recognition of startup opportunity	stage 1	0.111	1.831	0.068	0.012	1.748	0.080
	stage 2	0.048	0.782	0.435	0.002		
	Stage (Independent)	0.000	0.005	0.996	0.182		
	Stage 3 (Parameter)	0.426	7.686	< 0.001			
Financial Behavior Financial Management Behavior Recognition of startup opportunity	stage 1	0.167	2.782	0.006	0.028	2.601	0.009**
	stage 2	0.311	5.381	< 0.001	0.094		
	Stage (Independent)	0.247	4.583	< 0.001	0.241		
	Stage 3 (Parameter)	0.385	7.153	< 0.001			
Financial Attitude Financial Management Behavior Recognition of startup opportunity	stage 1	0.227	3.838	< 0.001	0.052	3.285	0.000***
	stage 2	0.493	9.303	< 0.001	0.243		
	Stage (Independent)	0.417	8.247	< 0.001	0.347		
	Stage 3 (Parameter)	0.332	6.555	< 0.001			

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

4.5. Hypothesis verification results and discussion

Table 9 shows the hypothesis verification results of this study in one table. Looking at previous studies, it is confirmed that the higher the financial literacy, the more positive influence it has on financial management behavior and the recognition of startup opportunities (Kang and Park, 2021; Langdal et al., 2022; Retzmann and Seeber, 2016). The results of this study are similar to existing previous studies, as they show that financial literacy and financial management behavior partially affect the recognition of startup opportunities.

Meanwhile, it was surprisingly found that financial knowledge and financial behavior, which are sub-factors of financial literacy, did not affect financial management behavior, unlike previous research results.

This means that although the surveyed first-year college students have high financial knowledge due to the digitalization of finance and easy access to financial information using social networks, financial management behavior is a practical and habitual area that appears along with full-scale income-earning activities in the future. This can be interpreted as a result similar to that of Wagner and Walstad (2019), who argued that financial education is more likely to influence long-term financial behavior rather than short-term behavior. Therefore, financial literacy takes time to lead to desirable financial management behavior.

It is confirmed that financial management behavior has a significant mediating effect between financial literacy and the recognition of entrepreneurial opportunities. This is because the more desirable financial management behaviors are practiced, the greater the willingness to explore various sources of income to achieve the expected standard of living in the future, set long-term financial goals, and conduct frequent inspections. This translates into a positive effect on the recognition of entrepreneurial opportunities (Kang and Park, 2021; Langdal et al., 2022; Retzmann and Seeber, 2016).

Table 9. Hypothesis verification results.

Hypothesis		**Whether to Accept the Hypothesis**
Hypothesis 1	Financial literacy → Financial management behavior	Partial adoption
	Financial knowledge → Financial management behavior	Dismissed
	Financial behavior → Financial management behavior	Dismissed
	Financial attitude → Financial management behavior	Adopted
Hypothesis 2	Financial literacy → Recognition of startup opportunity	Partial adoption
	Financial knowledge → Recognition of startup opportunity	Dismissed
	Financial behavior → Recognition of startup opportunity	Adopted
	Financial attitude → Recognition of startup opportunity	Adopted
Hypothesis 3	Financial management behavior → Recognition of startup opportunity	Adopted
Hypothesis 4	Financial literacy → Financial management behavior → Recognition of startup opportunity	Partial adoption
	Financial knowledge → Financial management behavior → Recognition of startup opportunity	Dismissed
	Financial behavior → Financial management behavior → Recognition of startup opportunity	Adopted
	Financial attitude → Financial management behavior → Recognition of startup opportunity	Adopted

5. Conclusion

This study examined the impact of the financial literacy of adolescent college students on the recognition of entrepreneurship opportunities and the mediating effect of financial management behavior. The results of the study showed that financial attitude, a sub-factor of financial literacy, had a positive effect on financial management behavior, while financial knowledge and financial behavior had no effect. Financial behavior and financial attitude were found to have a positive effect on the recognition of startup opportunities, while financial knowledge had no effect. Financial management behavior was found to have a partially positive mediating effect between financial literacy and entrepreneurship opportunity recognition.

With the development of science and technology, changes in the labor market environment, and the extension of life expectancy, our society has lost the concept of lifelong employment and needs to foster various types of entrepreneurs, such as those starting a business and creating jobs (Kang and Park, 2021). As financial literacy improves, it leads to desirable financial management behavior, which can be a motivational factor to prepare for long-term sustainable income-generating activities (Kang and Park, 2021; Langdal et al., 2022; Retzmann and Seeber, 2016).

College students are already financial consumers and are in the period of preparation to advance into society and become economically independent. Bernheim et al. (2000) found that mandatory financial education in schools significantly increases exposure to financial education and ultimately increases the rate at which individuals save and accumulate wealth during adulthood. These results are interpreted as evidence that financial education can be a powerful tool to stimulate individual financial independence.

This suggests that financial education can be a powerful tool for stimulating individual financial independence.

In conclusion, this study indicates that for potential entrepreneurs, recognizing and promoting entrepreneurship as a source of innovation and growth requires the reinforcement of financial literacy education and the formation of proper financial management behavior in schools.

However, as demonstrated by the results of this study and the research by Wagner and Walstad (2019), while financial education has the potential to positively impact household financial well-being, its effectiveness in achieving its goals may vary over time. Future research that tracks changes over time using the same sample through longitudinal studies would be more academically and practically significant.

Author contributions: Conceptualization, GLK and CWP; methodology, GLK and CWP; software, GLK and CWP; validation, GLK and CWP; formal analysis, GLK and CWP; investigation, GLK and CWP; resources, GLK and CWP; data curation, GLK and CWP; writing—original draft preparation, GLK and CWP; writing—review and editing, GLK and CWP; visualization, GLK and CWP; supervision, GLK and CWP; project administration, GLK and CWP; funding acquisition, GLK and CWP. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by the Project for Practical Use of Regional Science and Technology Performance of the Commercialization Promotion Agency for R&D Outcomes (COMPA) funded by the Ministry of Science & ICT (1711195989, Pusan National University).

Conflict of interest: The authors declare no conflict of interest.

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