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# Predicting Corporate Performance: An Integrated Approach Using Financial and Managerial Accounting Information

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### **Abstract:**

This paper examines whether a combination of financial and managerial accounting information together can better predict corporate performance than as standalone disciplines. A sample of 267 U.S. manufacturing companies were selected for this study. We expected that an integrated approach using variables from both disciplines would have a stronger predictive ability. Our analysis has found evidence that support our theory in that these two areas of practice provide more predictive value together than alone. We conclude by providing suggestions for further research.

#### **Introduction:**

Financial and managerial accounting are two of the largest fields of practice within accounting. They work simultaneously to empower decisions and summarize achievements. Although they work together to enable businesses to function, there are significant differences between the information generated by these two fields of practice. The differences between these two fields, these distinctive characteristics of accounting information generate unique properties which can potentially yield additional insights into a firm's performance beyond their intended functions.

Financial accounting information along with managerial accounting information and their relationship with corporate performance have long been topics of much interest among accounting researchers, practitioners, and investors. These parties eagerly consume any and all possible information related to firm performance in hopes of obtaining the upper hand in making investment decisions. Researchers have long voiced the need to also consider managerial accounting information in forecasting firm performance, however, there has been limited research examining this particular combination. This paper investigates if an integrated approach using both financial and managerial accounting information better predicts corporate performance than using a standalone approach.

The remainder of this paper is organized into several sections. Section 2 examines the nature of financial and managerial accounting information and some of their unique properties. Section 3 analyzes existing literature and the call for an integrated approach using both financial and managerial accounting information. Section 4 describes our research question and leads into our hypothesis. Section 5 outlines our research methodology and variables chosen to represent each domain. Section 6 reports on our data analysis and results. Finally, Section 7 provides concluding remarks and avenues for further research.



# **Differences Between Financial and Managerial Accounting Information**

Financial and managerial accounting are two of the largest fields of practice within accounting. They work simultaneously to empower decisions and summarize achievements. Although they work together to enable businesses to function, there are significant differences between the information generated by these two fields of practice. The differences between these two fields can be classified into several categories: the objective & audience, the timing & frequency, and the regulations & uniformity. The information generated by the two fields of study consist of these unique properties which will be discussed in more detail below. It is these distinctive characteristics of accounting information that can potentially yield additional insights into a firm's performance beyond their intended functions.

#### **Objective and Audience**

The objective and audience associated with accounting information influences its genetic makeup and should be considered by researchers, practitioners and the general public when including or excluding these variables in a research, investment, or evaluation setting. The goal of financial accounting is to summarize and report on the transactions resulting from business operations over a period a time. It focuses on results that have already been achieved and aimed at interested external parties such as investors, financial institutions and industry officials that seek to compare investment options across capital markets. Managerial accounting is the other side of the coin and focuses on the economic choices and constraints within an organization. In short, it exists to help managers and executives within the organization make decisions and pursue organizational goals in the most optimal manner. In discussing corporate social responsibility (CSR), Laplume explains that businesses in general are prone to stakeholder theory whereby those internal to the firm(managers) and external to the firm(investors) often do not see eye to eye and are motivated by different desires. (Laplume, 2008) From its onset, accounting information is already determined to land in the hands of either internal parties or external parties. In doing so, accounting information captures reasoning, goals, and suggestions of those whom the information is meant for. It is through an integration of both financial and managerial accounting that the undertones and interplay of both internal and external stakeholders can be used to more fully understand firm performance.

# **Timing and Frequency**

The timing and frequency associated with accounting information is another aspect that researchers must consider when including or excluding these variables in a research, investment, or evaluation setting. The information created through financial accounting is entirely historical and the data is also limited to a defined period of time. The most common and well-known form of this are the financial statements in a company's annual report that is issued at the end of their fiscal year. Managerial accounting information,

however, looks at past performance to create future forecasts, budgets, and analysis. The frequency of these reports are much greater than that of quarterly or annual reports in financial accounting and often depends on managers, directors or executives who seek an answer to a business question. The focus on the present and future imbues managerial accounting information with an undeniably powerful attribute that enables it to tackle bottlenecks or capitalize on opportunities says Yaw. (Yaw, 2004) This power to alter a firm's potential is a characteristic that captures the attention of researchers as it may yield predictive value in relation to firm performance. The integration of accounting information hopes to pair the historical value of financial accounting information with the forward-looking richness of managerial accounting information.

#### **Regulation and Uniformity**

The regulations and uniformity surrounding accounting information is yet another aspect that researchers must consider when including or excluding these variables in a research, investment, or evaluation setting. Prior to the 1920s, no group was responsible for any accounting standards until a call to regain the public's confidence and investor's trust was made due to the 1929 stock market crash. The Securities and Exchange Act of 1934 was passed and set the groundwork for Generally Accepted Accounting Principles (GAAP) which outlined financial accounting principles that focused on external reporting standards. Over the course of the next few decades, various frameworks were released until work began on the U.S. framework that remains in place today by the Financial Accounting Standards Board (FASB). Since the 2000s, the International Accounting Standards Board (IASB) has been working on developing new international financial reporting standards referred to as International Financial Reporting Standards (IFRS). It aims to update and refine existing concepts and provide guidance that includes comparisons between IFRS and GAAP. In modern times, the IASB and FASB are working towards a convergence that reflects the change in markets, business practices and economic environment. It is clear that financial accounting information is kept with considerable precision and is required by nearly half a century of legal mandates.

In contrast, managerial accounting has been greatly overshadowed and lagging behind from a concepts and framework perspective. This does not necessarily discount managerial accounting as Clinton explains that both management accountants and managers need to be able to generate flexible information that suits the need of a variety of business units. (Clinton, 2006) The Institute of Management Accountants (IMA) regards managerial accounting as the "value-creator" of the two subsets of accounting practices. (IMA, 2014) Managerial accounting is much more than financial data. It includes operational data such as customer satisfaction, inventory trends, products in the pipeline and even geographical tendencies. They stress that managerial accounting information is more lax compared to its brethren not because it is used behind closed doors, but rather it serves to affect the future of an organization than to satisfy compliance and a historical endeavor.



Despite their differences, an integration between these two fields of study can more fully capture structured, unstructured, financial, and non-financial accounting information that may have been missing from the opposing subset.

## Interrelationship

Earlier, we mentioned that financial and managerial accounting worked as one to enable businesses to meet compliance requirements and plan towards success. After discussing the differences between the information generated by these two fields of study, we felt that it is appropriate to also highlight the hierarchal flow of accounting information. In other words, it is managerial accounting information that influences management decision which ultimately cumulates into the financial accounting information. In essence, the magic starts behind the scenes, where managerial accounting information is generated and assembled for that competitive advantage that every firm is looking for. Kim and Matsumura understand that there is an abundance of financial accounting information catapulted to the limelight by the aftermath of multiple economic downturns in the 20<sup>th</sup> and 21<sup>st</sup> century and by regulatory bodies.(Kim and Matsumura, 2017) However, they criticize the cherry picking and unhealthy fixation of both investors and management. They agree wholeheartedly that trends and historical value are indispensable but also notes that a deficient set of eyes on managerial accounting information sets up multiple stakeholders to trade long term value creation for short term victories. By exploring the interrelationship between these two fields of study, we have concluded that an analysis of firm performance is incomplete without also looking at where the information comes from and how it is constructed.

# **Theory And Hypothesis**

Financial accounting research has been plentiful due to the abundance of data generated by several key legislation that include but are not limited to: The Securities Act of 1933 and 1934, the Sarbanes-Oxley Act of 2002 and the Dodd-Frank Act of 2010. Since then, numerous studies have explored financial accounting information and its relationship to environmental, social, governance and performance facets. These studies have drawn at best a weak to moderate link between financial accounting information and variables that may affect it. These key pieces of legislation have greatly weaponized external audiences in their ability to compare and assess a firm's performance. We feel that it has come to a point where users are paralyzed from information overload, diminishing returns and misrepresentation. Amat warns that these regulations forces firms to adopt a one size fits all cookie cutter comparison tool that gives way to creative accounting. (Amat, 2004) Jones adds to this issue and observes a tightening capital market with mounting pressure to outperform prior period's performance as firms manipulate estimates, structure transactions and fiddle with the timing of contracts. (Jones, 2010) While we agree that archival data serves as a good foundation on which to build upon, it still represents events that have long passed that may be tainted with potentially undiscovered distortion. This

leads us to suspect that it may have limited predictive value when considered by itself.

Managerial accounting research on the other hand has seen much less of the limelight despite its promises. Ittner and Larcker note that except for compensation studies, accounting researchers have treated these fields as independent, even though it is likely that they do not stand alone. (Ittner and Larcker, 2001) They also reiterate that managerial accounting information plays a key role in developing strategic plans, evaluating achievement, and compensating managers. Yet, many managers feel that the outdated traditional financial accounting-based measurement system has been slow to update to include managerial accounting-based measurements. (Ittner and Larcker, 1998) Shilinglaw also criticizes progress in the field of accounting research in which existing frameworks only consider the end result of serving external financial accounting reporting specifically. (Shillinglaw, 1979) On a similar note, Benninger urges standard setters and users to consider fundamental methods of expressing accounting facts than with the extent of disclosures in published statements. (Benninger, 1954) These sentiments are also echoed by Sprinkle who acknowledges that research in managerial accounting is few because this information may be unavailable or difficult to obtain. (Sprinkle, 2003) He notes that the methods in which the independent variables are measured may be different across industries and even slotted into different frameworks. Additionally, the independent variables under investigation may be contaminated or subject to selection biases.

Managers, investors, and regulators should be concerned about how businesses achieve their financial results as well as the financial results themselves. These concerns are also shared with other researchers, and we see that there is heavy emphasis within managerial accounting research that explore value drivers and how they help companies understand the reason for their current performance and how future performance will likely develop. In examining managerial accounting research, Ittner and Larcker confirms that understanding how value is created within a firm and management of drivers of long-term shareholder value has been a recent focus of managerial accounting research. (Ittner and Larcker, 2001) One such study by Bryant focuses on asset turnover and customer satisfaction. Bryant's research has found that firms that focus their managers' attention on multiple aspect of the firm that includes both financial and managerial accounting benchmarks have higher performance. (Bryant, 2004) Bryant urges users of accounting information to consider the journey itself as well as what that journey achieved. Positive cash flows and operating profits are both concepts of financial accounting, but their ultimate fate is the result of managerial actions based on managerial accounting information. This claim is consistent with calls in financial accounting research for greater disclosure of information related to key value drivers. (Wallman, 1995)

The field of managerial accounting research argues that value drivers influence manager choice and action plans but also ultimately make their way to affect external disclosures. (KPMG,



1999) This is complemented by the corporate desire to maximize financial statements results. Managerial and financial accounting work best together than as exclusive tools to meet business demands. We have seen that a focus on only accounting numbers or common financial ratios can lead to unwanted behaviors versus a combined approach that also examines operations and resource use for long term sustainable economic success. It is these resources and operations which are factual and untampered on which a manager makes decisions. The manager's decisions will act to change the current situation since the manager is interested in the possible outcome that will be detailed in the financial statements. Philip makes a strong point when he emphasizes that the stock market does not value a company for excellently prepared financial statements if operational excellence is lacking.(Philip, 2002) Researchers should aim to capture inputs and outputs with a variety of properties from operational and logistical systems than solely focus on just the end result. Without greater integration of financial and managerial accounting research, our understanding of accounting information and performance implications is far from complete.

# Hypothesis

Financial accounting information is bound by accounting standards, unyielding in form, reports based on a snapshot of the past, represents the interest of external parties and results from management decisions based on managerial accounting information. Managerial accounting information on the other hand is more so freeform and flexible, forward looking, represents managerial interest and ultimately gives rise to financial accounting information. The two accounting practices each contain unique qualities that encompass a wide variety of stakeholders and is expected to better predict corporate performance when used together than treated as standalone fields of practices. There have also been calls on both ends of the research spectrum to investigate this unification with existing literature that advocate for its potential value. This study makes contributions to existing literature and explores the association between financial and managerial accounting information to that of firm performance.

# Therefore, our null hypothesis is:

Financial accounting variables in conjunction with managerial accounting variables are less indicative of firm performance than taking a standalone approach of either areas of practice.

#### Research Methodology

A useful feature of this paper is our focus on a particular sector of the economy – the manufacturing sector. The U.S. Bureau of Labor Statistics defines the manufacturing industry as, "comprised of establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products." (U.S. Bureau of Labor Statistics, 2020) We use this definition in the data collection process to identify goodsproducing industries and companies that transform materials or substances into new products by machine or by hand. We sampled

manufacturing companies from the 2019 Fortune 1000 list which consists of the largest American companies ranked by revenue for the year of 2019. This list is compiled by American business magazine, Fortune, and only includes companies who file financials statements with the government and are often targets of research and investment. (Fortune, 2019).

The annual reports of these companies were obtained from the Securities and Exchange Commission's EDGAR tool. The Fortune 1000 list consists of 1000 companies across 66 industries. We applied a first level filter to exclude non-manufacturing industries. This eliminated 44 non-manufacturing industries such as advertising, banking, and entertainment because they do not fit the definition of a "goods-producing" industry. This eliminated 700 companies and we are left with 300 companies in 22 industries. We further narrowed our list by applying a second level filter to exclude non-manufacturing companies. We closely inspected the annual reports of the remaining companies to better understand their business profile and to filter out non-goods-producing companies. The companies that were excluded at this level mainly provided services and were not truly "goods-producing". This eliminated 33 additional companies and resulted in 267 manufacturing companies across 19 industries.

The focus of our study is to assess whether financial and managerial accounting information can better predict a company's performance. To that end, the data we extracted from these annual reports are organized into three categories: financial accounting information, managerial accounting information, and performance information. We use variables to represent the financial, managerial and performance information which will be described with more detail in a later section. Financial accounting variables were secured from the financial statements within the annual reports, and they serve the purpose of informing those external to the company. Managerial accounting variables were taken from areas of the annual report that include supplementary information such as the company's business profile, the notes to the financial statements, miscellaneous disclosures, and management's discussion & analysis. This information is usually used internally by managers and executives to manage company resources, but they are also available in an unregulated manner within the annual reports. Lastly, we have performance variables; these variables attempt to measure the company's performance. They encompass a variety of performance measures to capture areas that both internal and external stakeholders carefully track when making decisions.

# **Financial Accounting Variables**

Table 1 includes financial accounting variables that were calculated using information from the annual reports of the manufacturing firms chosen to be a part of this study. As mentioned in a prior section, these variables are intended to proxy for financial accounting information. This information is largely of monetary values and most commonly used by investors, creditors, and regulators to gauge a company's financial status to see if the capital

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they have invested is being put to good use. Financial accounting variables will be an independent variable in our study and may influence performance.

**Table 1:** Financial Accounting Variables

Variables	Description
NIBV	Net Income to Book Value
OCBV	Operating Cash Flow to Book Value
TCBC	Total Cash Flow to Book Value
EPSB	Earnings per share – Basic
EPSD	Earnings per share – Diluted

NIBV: this variable represents the firm's net income divided by their book value.

OCBV: this variable represents the firm's operating cash flow divided by their book

value.

TCBC: this variable represents the firm's total cash flow divided by their book value.

EPSD: this variable represents the firm's basic earnings per share. EPSD: this variable represents the firm's diluted earnings per share.

#### **Managerial Accounting Variables**

Table 2 includes managerial accounting variables that were calculated using information from the annual reports of the manufacturing firms chosen to be a part of this study. As mentioned in a prior section, these variables are intended to proxy for managerial accounting information. This information is a mix of monetary and non-monetary values, and most commonly used by managers, directors, and executives to make data-driven decisions that will result in the best use of scarce resources. Managerial accounting variables will be an independent variable in our study and may influence performance.

Table 2: Managerial Accounting Variables

Variables	Description
CSI	Cost of Sales Index
CCI	Conversion Cost Index
ASI	Asset Utilization Index
RDI	R&D Success Index
RDC	R&D Commitment Index
MSI	Market Share Index

CSI: this variable represents the firm's sales expense divided by

their total revenue.

CCI: this variable represents the firm's cost of goods sold and ending inventory divided

by their total revenue.

ASI: this variable represents the firm's total revenue divided by their average assets.

RDI: this variable represents the firm's new products within the last year divided by the

number of new products expected to be complete within the next year.

RDC: this variable represents the firm's research and development expense divided by

their total revenue.

MSI: this variable represents the firm's total revenue divided by the total revenue of their

industry

#### **Performance Variables**

Table 3 includes performance variables that were calculated using information from the annual reports as well as external sources. As mentioned in a prior section, these variables are intended to proxy for performance information. This information is a mix of monetary and non-monetary values and used by parties both internal and external to the company. While external parties are concerned about their investment into a company, internal parties are concerned if they are meeting organizational goals. Performance variables represent a crossroad where the two meet and are used to quantify an organization's health and standing. Performance variables are the dependent variables in our study and will be influenced by financial accounting variables, managerial accounting variables or both.

 Table 3: Performance Variables

Variables	Description
RET	Return
TPE	Trailing P/E
FPE	Forward P/E
DIV	Dividend Declared
FSC	Financial Strength – Current Year
FSP	Financial Strength – Prior Year
CFS	Change in Financial Strength

RET: this variable represents the firm's change in stock price divided by the beginning

stock price.

TPE: this variable represents the firm's trailing price to earnings

FPE: this variable represents the firm's forward price to earnings ratio.

DIV: this variable represents the firm's dividend declared for the year.



FSC: this variable represents the firm's current year financial strength and is calculated

by external sources that assess the firm's business risk and direction of profits.

FSP: this variable represents the firm's previous year financial strength and is

calculated by external sources that assess the firm's business risk and direction of

profits.

CFS: this variable represents the difference in the firm's financial strength between the

year of study and its prior year.

Since the focus of our study is to assess whether financial and managerial accounting information can better predict a company's performance either standalone or in combination, we used multiple regression analysis to observe the effect of:

- 1. Financial Accounting variables on Performance variables,
- 2. Managerial Accounting variables on Performance variables, and finally
- 3. Financial and Managerial accounting variables on Performance variables.

The results of our regression on financial accounting variables are contained in Table 4.

# **Data Analysis and Results**

Table 4: Financial Accounting Variables Regression

	Intercept	NIBV	OOBV	TOBV	EPSB	EPSD	F Value	Level of	R Squared
								Significance	
RET	0.196	-0.009	-0.003	0.010	-0.075	0.081	0.735	0.59775	0.014
TPE	22.565	-0.783	1.381	-0.146	-5.768	5.387	0.410	0.84191	0.008
FPE	12.893	0.144	0.297	1.696	2.598	-2.540	1.011	0.41147	0.019
DIV	0.876	0.364	-0.152	-0.328	-0.423	0.543	6.184	0.00001	0.106
FSC	5.226	0.299	-0.107	-0.066	0.213	-0.047	12.413	0.00000	0.192
FSP	5.303	0.305	-0.106	-0.076	0.147	0.007	11.994	0.00000	0.187
CFS	-0.017	0.003	-0.005	0.001	0.011	-0.008	0.785	0.56132	0.015

As Table 4 indicates, DIV, FSC and FSP are shown to be predictable to an extent using financial accounting variables as indicated by the level of significance value and the R squared value. DIV, FSC and FSP report significance levels well below the 0.100 threshold while their R squared values are significantly

above that of other variables intended to represent firm performance.

The results of our regression on managerial accounting variables are contained in Table 5.

Table 5: Managerial Accounting Variables Regression

	Intercept	CSI	OOI	ASI	RDI	RDC	MSI	F	Level of	R Squared
								Value	Significance	
RET	0.279	0.116	-0.055	-0.027	-0.004	-0.141	-0.095	0.611	0.72162	0.014
TPE	23.316	-3.873	0.205	-2.741	-1.087	31.107	-7.402	0.694	0.65501	0.016
FPE	14.003	-0.458	-0.625	-0.858	-0.416	14.694	0.956	0.975	0.44250	0.022
DIV	1.454	-0.370	0.039	-0.107	0.110	2.722	-1.654	1.226	0.00292	0.128
FSC	6.600	1.009	-0.893	-0.511	0.174	6.059	-0.349	9.492	0.00000	0.180
FSP	6.532	0.648	-0.676	-0.476	0.157	5.635	-0.492	7.955	0.00000	0.155
CFS	0.009	0.052	-0.033	-0.007	0.002	0.089	0.018	1.395	0.21699	0.031

As Table 5 indicates, DIV, FSC and FSP are shown to be predictable to an extent using managerial accounting variables as indicated by the level of significance value and the R squared value. DIV, FSC and FSP report significance levels well below the 0.100 threshold while their R squared values are significantly above that of other variables intended to represent firm performance.

The results of our regression on both financial accounting variables and managerial accounting variables are contained in Table 6.



Table 6: Financial AND Managerial Accounting Variables Regression

	Interce	NIB	00	TOB	EPS	EPS	CSI	OOI	ASI	RDI	RDC	MSI	F	Level of	R
	pt	V	BV	V	В	D							Valu	Significa	Squared
													e	nce	
R	0.259	-	-	0.01	-	0.08	0.10	-	-	-	-	-	0.63	0.80066	0.026
E		0.01	0.00	1	0.07	0	1	0.04	0.02	0.00	0.144	0.10	2		
T		0	4		4			7	7	6		1			
T	25.657	-	1.35	0.47	-	6.97	-	-	-	-	38.32	-	0.63	0.79960	0.026
P		0.99	9	4	7.44	4	2.49	0.95	2.86	0.86	3	6.19	3		
E		1			7		5	0	3	1		7			
F	13.666	0.06	0.30	1.91	1.88	-	-	-	-	-	15.00	0.73	0.95	0.48476	0.039
P		0	4	3	6	1.86	0.62	0.55	0.82	0.41	7	4	8		
E						6	7	3	3	9					
D	0.873	0.36	-	-	-	0.55	-	0.28	-	0.05	1.629	-	3.43	0.00018	0.128
Ι		4	0.15	0.30	0.42	0	0.72	9	0.06	8		1.76	0		
V			7	4	7		0		3			5			
F	5.913	0.23	-	0.03	-	0.18	0.59	-	-	0.11	4.919	-	9.96	0.00000	0.270
S		9	0.08	5	0.04	4	6	0.60	0.46	9		0.55	5		
С			8		5			7	3			0			
F	5.876	0.25	-	0.01	-	0.21	0.25	-	-	0.10	4.544	-	8.99	0.00000	0.279
S		6	0.09	5	0.07	0	4	0.40	0.42	3		0.67	8		
P			2		8			2	9			6			
C	0.001	0.00	-	0.00	0.00	-	0.04	-	-	0.00	0.076	0.01	0.92	0.51686	0.038
F		1	0.00	3	5	0.00	7	0.03	0.00	1		5	4		
S			4			4		0	7						

As Table 6 indicates, DIV, FSC and FSP are shown to be predictable to an extent using accounting variables from both fields as indicated by the level of significance value and the R squared value. DIV, FSC and FSP report significance levels well below a 0.100 threshold while their R squared values are significantly above that of other variables intended to represent firm performance. The results of our comparison have revealed that the R squared values for DIV, FSC and FSP are higher than that of the individual standalone regressions and on a level of significance that is acceptable. Therefore, we reject the null hypothesis that financial accounting variables in conjunction with managerial accounting variables are less indicative of firm performance than taking a standalone approach of either areas of practice.

#### **Conclusions**

The objective of this paper is to assess whether a union of financial and managerial accounting information can better predict corporate performance than their standalone counterparts and identify fruitful avenues for future research. The ultimate question is whether there is anything intrinsically significant in integrating both financial and managerial accounting information that produces desirable changes in how researchers, practitioners and investors use accounting information when making investment choices. Financial and managerial accounting are two sides to a single coin in that they are both necessary for businesses to function. As a

result, they produce a treasure trove of unique information. The distinctive accounting information that each discipline produces contain unique properties that may yield additional insights into a firm's performance beyond that of their intended function of reporting and decision making.

Our study demonstrates that the combination of financial and managerial accounting variables can better predict corporate performance. We sampled 267 manufacturing companies from the U.S. Fortune 1000 list to test our theory. Our analysis revealed that certain performance variables can be better predicted with a blend of financial and managerial accounting variables. We encourage further investigation of this arrangement by expanding the parameters of the research. This model can be better refined to include different financial and managerial accounting variables that better predict corporate performance. Furthermore, it can also be expanded to medium and small businesses and even on an international scale. Lastly, although our research focused mainly on manufacturing firms, a more rigorous model may someday be applied to all industries.

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