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Does Working Capital Management Impact Profitability? A Study on ASEAN-5 Food and Beverage Companies

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Abstract

Objective: This study aims to examine the impact of working capital management on profitability of go-public ASEAN-5 food and beverage companies.
Design/Methods/Approach: This study employs multiple linear regression analysis on secondary financial data of go-public ASEAN-5 food and beverage companies from 2017-2022. The sample for the research is deliberately chosen through purposive sampling technique.
Findings: The results indicate that the cash conversion cycle (CCC), receivable conversion period (RCP), and accounts payable period (APP) have a significant negative impact on profitability, proxied by return on assets (ROA), while the inventory conversion period (ICP) has a positive effect on profitability.
Originality/Value: This study uniquely explores the food and beverage sector in the ASEAN-5 region with adding the dimension of crisis, COVID-19 pandemic.
Practical/Policy implication: Based on the results, food and beverage sector managers should be more careful in making investment decisions regarding inventory, especially during a crisis. Also, maintaining good trade relations with suppliers through timely debt payment would be better.

Keywords: Working capital management, Profitability, Food and beverage

JEL Classification: G01, G30, G32

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1. Introduction

In 2020, the announcement of COVID-19 as a global pandemic by WHO (World Health Organization) has seen several countries across ASEAN going into strict lockdown. This policy has significantly impacted both non-business activities and business operations, disrupting economic activity overall, causing bankruptcies in numerous companies around the world, and leading to a global recession economically (Costa Junior et al., 2021; Jackson, 2022). Manufacturing sector is necessary to build their economies of the five major economic drivers in Southeast Asia, so-called ASEAN-5, Singapore, Indonesia, Malaysia, Thailand, Philippines. In terms of economic growth for these countries, this sector has previously been pivotal but seen unparalleled challenges during the COVID 19 pandemic. In particular, companies' operations in this sector have been notably impeded (Nguyen & Hoang Dinh, 2021). However, the most sensitive areas in the manufacturing sector included such barriers as supply chain issues and challenges of digitalization along with rising prices for raw materials which are supplemented by volatile currency exchange rates, active market demand, limited activities, high logistic transportation costs, decisions to downsize workforces (Telukdarie et al., 2020)

ASEAN, the world's fifth largest economy with over 670 bilion people in population size v, has a total GDP of US$3.6 trilion in 2022 or about 3.5% of world GDP in 2020 and 2021 (ASEAN, 2022). ASEAN, along with its pioneers, the so-called ASEAN-5 (Singapore, Thailand, Malaysia, Indonesia, and Philippines), is characterized by a common geographical location in Southeast Asia. Therefore, the region's countries have many active cooperative relationships and mutual assistance in the social, cultural, technological, and economic fields, as well as cooperation aimed at achieving greater effectiveness in developing agriculture, industry, and trade, including international trade. These relationships have also led to the region's food systems being highly interdependent and thus experiencing similar constraints, especially in the food industry (PricewaterhouseCoopers, 2020).

In a more specific industry scope, the food and beverage subsector is one of the main subsectors of the manufacturing industry impacted by COVID-19 in ASEAN-5. This subsector proves to be indispensable, particularly during times of crisis, not only for its role in providing essential and nutritious food for the population but also for its substantial share to economic output and employment across the ASEAN-5 region (PricewaterhouseCoopers, 2020). This sector contributes to around 116 billion jobs in ASEAN, or 25% of the total labor force. It contributes around US$500 billion of economic output to the region, around 17% of ASEAN's total GDP in 2018. Despite the challenges posed by the pandemic, the food and beverage subsector faces additional complexities due to frequent lockdowns implemented as part of state efforts to curb activities that could exacerbate the spread of the virus. These lockdowns, while serving a crucial public health purpose, have far-reaching consequences, causing a substantial impact on the traffic of goods and commodities between countries. This, in turn, reverberates through the global supply chain, influencing food supplies and contributing to the complex dynamics of economic exchange, coupled with the strengthening dollar exchange rate (Kemenperin, 2020).

In the face of emerging challenges, the industry grapples with the imperative of operational and supply maintenance and the pressing need to safeguard its financial health amidst the volatility of trading volumes during crises and other unpredictable dynamic conditions. This can be realized by having a good cost management strategy, ensuring industry stability and optimal contributions (PricewaterhouseCoopers, 2020). To facilitate smooth operations and enhance profitability, companies must pay attention to the adequacy of working capital and the proper application of working capital management (Akbar et al., 2021).

Companies use working capital like cash, inventory, accounts receivable, company securities, and other current assets to finance their short-term activities and ongoing operations (Le, 2019). Most manufacturing companies typically have these current assets constituting a large portion of their total asset, so paying great attention to the management is necessary. The working capital management play a significant role towards the profitability of any company. This is because working capital plays a crucial role in daily operations and serves as an insulator against cash flow gaps while maintaining profitability at all times. Thus, thus strategic choices that are made in this area not only help to overcome the emerging crises but also fortify the company's survival and position it for long-term success as a business entity in an ever-changing market.

Several previous studies examine the impact of working capital management, proxied by cash conversion cycle (CCC), and its constituent components, namely receivable conversion period (RCP), inventory conversion period (ICP), and account payable period (APP) on profitability. In a comprehensive review of prior research, a positive correlation between CCC and RCP with ROA surfaced in studies conducted by Amponsah-Kwatiah and Asiamah (2021) on manufacturing companies listed on the Ghana Stock Exchange, as well as by Alvarez et al. (2021) on Argentine manufacturing firms. Conversely, divergent results emerged from research undertaken by Syeda (2021) on trading companies in the United States and by Demiraj et al. (2022) on automotive companies in Europe, which found that there is a negative effect of CCC and RCP on ROA, emphasizing the nuanced and context-dependent nature of these relationships.

On the effect of ICP and APP, positive outcomes were documented in research by Alvarez et al. (2021) and Din (2020) concerning manufacturing companies listed on the Pakistan Stock Exchange. In contrast, investigations conducted by Lyngstadaas and Berg (2016) on small and medium-sized Norwegian firms and by Demiraj et al. (2022) revealed negative correlations. Aryawan and Indriani (2020) conclude that ICP and CCC did not significantly affect ROA.

Previous studies discussing the effect of working capital management on profitability have found inconsistent results, suggesting that the relationship between working capital management and profitability may vary across industries and geographic contexts. These insights accentuate the need for businesses to tailor their working capital strategies based on specific industry dynamics and regional factors to achieve optimal financial performance.

This study delves into the intricate relationship between working capital management and profitability within the food and beverage manufacturing sector in ASEAN-5, spanning the period from 2017 to 2022, by adding a crisis dimension as a dummy control, namely the COVID-19 period. To the best of author's knowledge, this is the first study to examine related variables in the ASEAN-5 region and industry by considering the crisis due to the COVID-19 pandemic. This research offers several significant contributions. Firstly, it aims to explore the nuanced relationship between working capital management and profitability, specifically examining how the emergence of the COVID-19 pandemic has influenced this dynamic. By addressing this issue, the research not only fills existing gaps in the literature but also sheds light on the complexities introduced by the crisis.

Secondly, it delves into the unprecedented economic environment brought about by the pandemic, particularly within the ASEAN-5 region. Within this context, the study seeks to understand how businesses in this region have adapted their working capital strategies in response to the crisis, considering the unique challenges they face. Thirdly, by incorporating the COVID-19 pandemic as a control variable, the research ensures methodological rigor, enabling the attribution of observed effects on working capital management and profitability explicitly to the crisis rather than general industry fluctuations.

Fourthly, the research focuses on the food and beverage sector, known for its heightened sensitivity to economic shocks and rapid shifts in consumer behavior. It explores how the pandemic has acted as a catalyst, significantly altering this industry's consumer preferences and purchasing patterns. By conducting a more granular and sector-specific analysis, the study aims to provide a detailed understanding of how the crisis has impacted working capital dynamics and, consequently, profitability in companies engaged in producing and distributing food and beverages. This involves examining disruptions across supply chains, which have affected inventory management and production cycles within the sector. Lastly, it provides essential insights for food and beverage companies to optimize their working capital strategies in response to ongoing and potential future crises, aiding in the formulation of targeted solutions.

The structure of this article comprises the presentation of the theoretical basis and the proposed research hypothesis, followed by the 'Method' section, which describes the research methods employed. The 'Results and Discussion' section discusses findings and their interpretation. Lastly, the 'Conclusion' section summarizes the study's main findings and outlines possible directions for further investigating this issue.

2. Literature Review and Hypotheses Development

2.1 CCC Theory

Since the introduction of the concept by Gitman & Zutter (2018) regarding the cash cycle's role in managing a company's working capital and its implications for company liquidity, numerous subsequent studies have been conducted to assess the relationship between working capital and company performance. One notable contribution comes from the work of Richards & Laughlin (1980), who further developed the concept into the Cash Conversion Cycle (CCC) theory. Richards & Laughlin (1980) delved into analyzing a company's working capital efficiency through this framework. According to this theory, ceteris paribus (assuming other factors remain constant), efficient working capital management, proxied by CCC, can enhance liquidity, profitability, and overall firm value. Conversely, inefficient working capital management, as reflected in a longer CCC, tends to diminish profitability and decrease firm value.

The CCC theory provides valuable insights into effective working capital management, emphasizing its potential role in significantly improving a company's overall performance. This, in turn, has a significant effect on the intrinsic value and profitability of the company. As elucidated by Richards and Laughlin, the Cash Conversion Cycle (CCC) is a multifaceted concept encompassing three essential components, inventory conversion period, receivable conversion period and payable deferral period can be taken into consideration. The smooth interaction of these elements makes operations run smoothly and affects a company's financial health. Fewer days cash conversion cycle decreases a firm's ability to manage its cash flow, especially during difficult and possibly tumultuous circumstances. When the cash conversion cycle is prolonged, companies typically face significant investments in inventories and receivables that are difficult to convert quickly into money. As a result, it reduces the capability of the company to use resources from operating cash flow that could be helpful in meeting obligations promptly based on maturity intervals.

Good working capital management means that a firm can finance its daily operations. Effective working capital management is crucial in ensuring robust liquidity and the ability to cover short-term obligations, solidifying healthy finances for companies over the long term. Optimizing the company's cash cycle helps to avoid liquidity risk and improve efficiency in operations. Companies that are good at working capital management achieve a positive financial profile and show they can carry out investment projects without undermining financial stability. Therefore, working capital management goes beyond ensuring the continuous flow of company operations; it plays a pivotal role in augmenting overall profitability. A company's ability to navigate a longer cash conversion cycle indicates its strategic prowess in

sustaining financial resilience and operational excellence. Effectively managing working capital establishes a solid foundation for companies to weather economic uncertainties, fostering not only survival but also prosperity in a dynamic business landscape.

2.2 Hypotheses Development

The Cash Conversion Cycle (CCC) is defined as the time it takes since purchased raw materials are paid for and accounts receivable from sales are collected (Besley & Brigham, 2000). According to Laghari & Chengang (2019), CCC is measured by adding the receivable receipt period to the inventory receipt period and subtracting the debt turnover period. Based on theory, a company with a short CCC period indicates effective working capital management and vice versa. The CCC theory by Richards & Laughlin (1980) also conveys the same idea regarding the cash conversion cycle. When a company has a longer CCC cycle, it affects its flexibility in managing its cash flow when facing economic uncertainty. A long CCC cycle also illustrates that the company has an excessive investment in the constituent components of the CCC, namely inventory and receivables, which may take a long time for the company to convert into cash. In the end, this will affect the company's ability to fulfill its obligations on time and the long-term risk of reducing its ability to obtain additional funds, especially in short-term loans in unstable economic situations.

This perspective resonates with Ukaegbu (2014) assertion that a concise Cash Conversion Cycle (CCC) period often reflects efficient cash management, leading to heightened profitability. Conversely, a protracted CCC period signals less effective working capital management, contributing to a decline in both company performance and profitability. The adverse impact resulting from a brief CCC period on increased company profitability is substantiated by several studies, including those conducted by Din (2020) on manufacturing companies in Pakistan spanning 2007 to 2018, Michel et al. (2020) on wine firms in France covering the years 2003 to 2014, and Singh et al. (2017) on non-financial companies across Southeast Asia, South Asia, and East Asia. Consistent findings are also echoed in the works of Syeda (2021), Aldubhani et al. (2022), and Demiraj et al. (2022). Therefore, this study proposes the following hypothesis:
H1: Cash Conversion Cycle (CCC) has a negative effect on company profitability

The Receivable Conversion Period (RCP), or the time it takes for a company to collect outstanding receivables and convert them into usable cash, holds a critical position in financial assessments. As denoted by Martono & Harjito (2003), receivables encompass the bills extended by a company to buyers who have opted for credit transactions, be it in the acquisition of goods or the utilization of the company's services. In essence, the RCP serves as a valuable metric, shedding light on the efficiency with which a company manages its receivables. A shorter RCP suggests a streamlined process of collecting outstanding dues and indicates the company's agility in swiftly converting these receivables into liquid assets, showcasing financial prowess and effective liquidity management.

Firms with a quick receivables collection tend to have an impressive capacity to reduce the risk of bad debt and improve overall cash flow. In turn, this operational efficiency implies that the company's profitability is positively affected. In accordance with the Cash Conversion Cycle (CCC) theory's principles, quick receivable collections are essential for maintaining an efficient cash flow cycle. On the other hand, a longer period in transforming receivables into available money may hamper the operational turnaround of cash and, therefore, delay payments for obligations. This, in turn, has a negative impact on the overall profitability of two companies. Several empirical studies validate the inverse correlation between RCP and profitability. Yakubu et al. (2017) researched non-financial firms in Ghana spanning the period 2010-2015, while Soda et al. (2022) investigated Jordanian industrial firms listed on the Amman Stock Exchange (ASE) from 2014 to 2020. Additionally, Demiraj et al. (2022), Aldubhani et al. (2022), and Syeda (2021) have all contributed to the body of knowledge affirming the negative impact of prolonged RCP periods on profitability. Thus, based on these insights, the following research hypothesis is posited:
H2 : Receivable Conversion Period (RCP) has a negative effect on company profitability

The Inventory Conversion Period (ICP) denotes the duration required for a company to transform raw materials into finished goods and subsequently vend these products to customers. A concise ICP period holds the potential to augment the company's profitability by signifying efficient processing of inventory from raw materials to saleable finished goods within a short timeframe. Analogous to accounts receivable, an unwarranted investment in inventory can potentially protract the company's cash flow cycle, aligning with the principles of the Cash Conversion Cycle (CCC) theory. This investment poses multifaceted risks, encompassing storage costs and potential damages that diminish inventory value, thereby impeding its conversion into cash inflows for operational needs and the settlement of outstanding liabilities. The adverse correlation between ICP and profitability, established by Demiraj et al. (2022), Akgün and Şamiloğlu (2016) in their study on Turkish manufacturing firms listed on the ISE spanning a decade from 2003 to 2012, as well as Arnaldi et al. (2021) in their research on manufacturing companies in the Czech Republic over 5 years from 2014 to 2018, substantiates the proposed hypothesis regarding the relationship between ICP and profitability. The hypothesis posited is as follows:
H3 : Inventory Conversion Period (ICP) has a negative effect on company profitability

The account payable period (APP) measures how long a company takes to settle its debts, as Besley & Brigham (2000) explained. When the APP period is longer, it means the company is taking more time to pay off its obligations. Companies employ this strategy to utilize the funds earmarked for debt payments in their day-to-day operations. By doing so, they can generate profits and, in turn, enhance overall profitability. This approach allows companies to efficiently manage their financial resources, ensuring they can balance debt responsibilities while maximizing operational potential for increased financial gains.

Aligned with CCC theory, the duration a company takes to settle its debts serves as a solution for liquidity challenges that may arise when the company operates on a prolonged cycle. A protracted APP period can be seen as a deliberate strategy employed by companies to bolster liquidity. By holding onto more cash from debts, companies can fund their operational activities and other investments, contributing to attaining desired profitability levels. Leveraging debt also affords companies greater flexibility in resource management. This is because debt can save internal resources that may be used as other funding sources, such as retained earnings, for expansion, research and development, and other operational needs. This positive correlation between APP and profitability is supported by various prior studies, including research by Altaf and Shah (2018) on non-financial Indian companies, Jakpar et al. (2017) on manufacturing firms listed on the Bursa Malaysia spanning from 2007 to 2011, and findings by Alvarez et al. (2021), Aldubhani et al. (2022). Consequently, this study posits the following hypothesis:

H4 : Account Payable Period (APP) has a positive effect on company profitability

3. Method

Throughout this research, a comprehensive set of variables has been employed, including four independent variables, one dependent variable, and three control variables, which include dummy. The independent variables selected include the cash conversion cycle (CCC), receivable conversion period (RCP), inventory conversion period (ICP), and accounts payable period (APP). The dependent variable in this study is ROA, which is used as a gauge to measure company profitability and has been consistent in its use across several antecedent studies such as those carried out by Kerry (2023), El-Ansary and Al-Gazzar (2021), and Ozkaya and Yasar (2023).

Within the realm of control variables, this study incorporates three crucial components. Firstly, leverage (LEV) is considered, offering insights into the extent to which companies employ loan capital or debt within their capital structure. Secondly, liquidity (LIQ) is assessed through the current ratio, providing a comprehensive understanding of a company's ability to settle current liabilities using total current assets. Lastly, the inclusion of the COVID-19 pandemic control dummy variable serves the purpose of gauging whether crisis conditions exert an influence on the relationships between the variables under investigation. Worth noting is the coding mechanism of the dummy variable, where 0 (zero) stands for the period before COVID 19 pandemic, and 1(one) is tied to the times of a global health crisis. This delicate approach promotes the accuracy and specificity of research design, facilitating a thorough understanding of intricate dynamics.

The secondary data utilized in this study was taken from company annual reports for 2017 through 2022. The information was meticulously sourced from the Bloomberg database, facilitated by the Faculty of Economics and Business at Diponegoro University. The study focuses on the population of publicly listed companies within the food and beverage subsector across ASEAN-5 during the specified period. A purposive sampling approach was employed to carefully select 141 companies as representative samples for the study. To analyze the gathered data, this research adopts the method of multiple regression, and the ensuing statistical procedures are executed using SPSS 22 as the primary data processing tool. The systematic formulation of the multiple linear regression analysis equation is articulated as follows:

$$ROA_{it} = \alpha_0 + \beta_1 CCC_{it} + \beta_2 LEV_{it} + \beta_3 LIQ_{it} + \beta_4 D\_COVID_{it} + \varepsilon_{it} \quad \text{(1)}$$

$$ROA_{it} = \alpha_0 + \beta_5 RCP_{it} + \beta_6 ICP_{it} + \beta_7 APP_{it} + \beta_8 LEV_{it} + \beta_9 LIQ_{it} + \beta_{10} D\_COVID_{it} + \varepsilon_{it} \quad \text{(2)}$$

The constant is denoted by α, while β1 to β10 represent the regression coefficients associated with the independent variables. The term ε denotes the error term. In this context, "*i*" refers to a specific company within the dataset, and "*t*" signifies the particular year of observation.

This study uses four independent variables, one dependent variable, and four control variables. Table 1 describes all the variables used in the study, its operational definitions, and measurements.

Table 1. Variables and Measurements

Variables	Operational Definition	Measurement
Dependent Variable		
Return on Assets (ROA)	The company's ability to generate profits.	Net Income / Total Assets
Independent Variables		
Cash Conversion Cycle (CCC)	The time required for raw materials to be transformed into finished goods, sold, sales receivables to be collected, and debt to be paid.	RCP + ICP - APP
Receivable Conversion Period (RCP)	The duration it takes for the company to collect its receivables.	(Account Receivable/Net Sales) x 365
Inventory Conversion Period (ICP)	The time it takes for the company to sell its inventory to customers and convert it into cash.	(Inventory/Cost of Goods Sold) x 365
Account Payable Period (APP)	The time it takes for the company to settle its debts.	(Account Payable/Purchases) x 365
Control Variables		
Leverage (LEV)	The company uses loan capital or debt in its capital structure.	Total Debt / Total Assets
Liquidity (LIQ)	Company's ability to cover its short-term obligations with its available short-term assets.	Current Assets / Current Liabilities
COVID-19 (D_COVID)	Controlling the effects of the COVID-19 pandemic on the relationship between variables.	"0" indicates pre-COVID-19 period (2017-2019). "1" indicates during the COVID-19 period (2020-2022).

4. Result and Discussion

Descriptive statistical analysis aims to provide insights into the characteristics and general description of the research data. It is carried out to explain the characteristics or general description of the dataset. Through descriptive statistics, the number of samples, mean, maximum, minimum, and standard deviation values of the data used in the study can be seen.

In Table 2, there are 846 observations of companies within the food and beverage subsector listed on the stock exchanges of the ASEAN-5 countries—Indonesia, Singapore, Malaysia, Thailand, and Philippines. The average ROA across these companies is calculated at 0.045 (4.5%), suggesting that, on average, the performance of the studied companies reflects a profitable condition. Delving deeper into the data, we see that the ROA variable exhibits notable variability. The minimum recorded value for ROA is -0.23 (-23%), associated with a company based in Indonesia, namely Dua Putra Utama, during the year 2020. On the other end of the spectrum, the maximum ROA value is 0.22 (22%), attributed to a company from Thailand, specifically Carabao Group PC, also in 2020. Adding further insight, the standard deviation of the ROA variable is computed at 0.058. This value exceeding the average indicates a significant degree of dispersion or variability in the ROA values across the sampled companies.

The cash conversion cycle (CCC) variable, with an average duration of 87.24 days, provides valuable insights into the operational efficiency of companies within the research sample. This metric signifies the typical time it takes for a company to convert purchased raw materials into finished goods, complete the sales process, and collect receivables, all while settling accounts payable within the span of 87.24 days. The CCC exhibits variability, ranging from the shortest recorded duration of -65.67 days to the longest period of 971 days. This breadth underscores the diversity in companies' abilities to manage their cash conversion processes. Adding nuance to our understanding, the standard deviation value for CCC is calculated at 83.25. Importantly, this value, being smaller than the average duration, suggests a relative consistency in the CCC variable across the sampled companies.

Table 2. Descriptive Statistics

Variables	N	Obs	Std. Deviation	Minimum	Maximum
ROA	846	0.045	0.058	-0.230	0.220
CCC	846	87.242	83.259	-65.570	971.000
RCP	846	39.622	41.923	0.690	634.470
ICP	846	80.405	63.225	1.940	572.750
APP	846	29.704	21.577	0.010	128.150
LEV	846	0.262	0.177	0.000	0.770
LIQ	846	2.224	4.042	0.100	66.210

The receivable conversion period (RCP) variable offers insights into the duration a company requires to convert its receivables into cash. Across the sample companies, the average RCP stands at 39.62 days, depicting the typical timeframe within which companies collect their receivables. Further exploration of the data reveals a spectrum of RCP durations. The shortest recorded RCP is 0.69 days, underscoring an efficient receivables conversion for some companies. Conversely, the longest RCP period reaches 634.47 days, indicating a more prolonged process for certain entities. A crucial measure of variability, the standard deviation for the RCP variable, is computed at 41.92, surpassing the average value. This points to significant variability in the RCP variable across the sampled companies.

The inventory conversion period (ICP) variable offers valuable insights into the duration a company requires to transform its existing inventory into sales. According to the descriptive statistics table, the shortest recorded ICP is 1.94 days, indicating a swift inventory turnaround into sales. Conversely, the longest ICP period extends to 572.75 days, suggesting a more prolonged process for certain companies. Moreover, the standard deviation value for ICP is calculated at 63.22. Notably, this value is lower than the average ICP, indicating a relatively consistent pattern in inventory conversion periods across the sample companies.

The account payable period (APP) variable offers insights into the efficiency with which a company settles its accounts payable to suppliers. According to the data presented in Table 2, the longest recorded period for a company to pay its debts is 128.15 days, reflecting a more extended payment cycle. In contrast, the shortest period for debt settlement is a mere 0.01 days, indicative of a company with a swift payment process. Examining the variability in the APP variable, the standard deviation is calculated at 21.57. Significantly, this value is lower than the average APP, suggesting a relatively consistent pattern in how companies within the study pay their debts.

Before conducting and analyzing regression on the research model, a classical assumption test is performed to ensure the data's feasibility to provide the best and most accurate estimations. First, the Kolmogorov-Smirnov test's normality test showed that the p-value is greater than 0.05, so the data in this study were normally distributed. Second, the multicollinearity test shows that all models have the tolerance value of more than 0.1 and the Variance Inflating Factor (VIF) value below ten (10), indicating no multicollinearity problem in the research model. Third, the Park test's heteroscedasticity test shows the p-value is greater than 0.05, suggesting that the variance of the regression model error is constant across all levels of the independent variable, thus indicating no heteroscedasticity problem. Finally, the autocorrelation test using the Durbin-Watson test shows no autocorrelation problem in the research model. Therefore, the classical assumptions have been met and can proceed to regression analysis.

The regression results are presented in Table 3. It is known that the Cash Conversion Cycle (CCC) is a vital measure used to assess a company's management of working capital. In the context of this investigation, an exciting discovery emerges as the CCC reveals a significant adverse effect on the Return on Assets (ROA) of companies operating in the food and beverage subsector. This finding highlights a clear correlation: as the number of CCC days increases, the company's ROA tends to decrease, while a lower CCC is associated with a higher ROA. A prolonged CCC period indicates that the company requires more time to collect payments, sell inventory, and settle its debts. The alignment between the research findings and the initial hypothesis provides empirical evidence, leading to the acceptance of the first hypothesis. This confirms the idea that efficient management of working capital, as demonstrated by a lower CCC, positively impacts the company's overall profitability.

The study's findings echo similar outcomes observed in prior research conducted by Michel et al. (2020), Demiraj et al. (2022), Arnaldi et al. (2021), and Aldubhani et al. (2022). These researchers have contributed to the body of knowledge, laying the foundation for the current study's alignment with their respective investigations. A short CCC indicates that the company can manage its working capital well and illustrates the company's reasonable ability to rely on its current assets to meet its obligations, sufficient resources for its operations, and maintain a high rate of conversion of inventory into cash, ultimately maximizing profitability (Soda et al., 2022).

The receivable conversion period (RCP) is a pivotal metric that gauges a firm's efficiency in collecting accounts receivable. Regression analysis demonstrates RCP's enormously significant adverse impact on return on assets (ROA). Essentially, this implies that a protracted duration for the company to collect its receivables is associated with a subsequent decrease in profitability. These findings underscore the intricate interplay between the efficiency of receivables collection and its direct influence on overall profitability. The alignment between the empirical results and the proposed hypotheses substantiates the validity of the second hypothesis.

Similar research outcomes have been corroborated in the studies conducted by Demiraj et al. (2022), Soda et al. (2022), Syeda (2021), and Aldubhani et al. (2022). These researchers have contributed valuable insights that echo the present study's findings. Companies must carefully consider their credit policy, especially concerning credit sales and accounts receivable management. While short-term credit sales are often deemed as profitable investments, the efficacy of such a strategy hinges on the judiciousness of credit terms and management practices. Overly lenient credit policies may give rise to adverse consequences impacting profitability. These ramifications may manifest in additional expenses such as factoring charges, particularly if the company engages the services of a factor (factoring company), and an augmented risk of uncollectible accounts. Therefore, a comprehensive approach to credit management becomes paramount for companies seeking to strike a balance between profitability and the prudent management of credit-related risks.

Table 3. Regression Results

Variables	**ROA Model 1**	**ROA Model 2**
CCC	− 0.0000561 **	
	(0.000)	
RCP		− 0.000297 ***
		(0.000)
ICP		0.0000717 *
		(0.000)
APP		− 0.000219 **
		(0.000)
LEV	− 0.151 ***	− 0.161 ***
	(0.011)	(0.010)
LIQ	− 0.001 *	− 0.001 **
	(0.000)	(0.000)
D_COVID	0.008 *	0.008 *
	(0.004)	(0.003)
Constant	0.089 ***	0.099 ***
	(0.005)	(0.005)
Observation/N	846	846
R-squared	0.207	0.244
Adjusted R-squared	0.203	0.239

Notes: Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The Inventory Conversion Period (ICP) refers to the time frame that businesses need to shift raw materials into finished goods and sell it. A longer ICP period means that considerable amounts of resources are tied up in inventory as investments. The third hypothesis put forth by the study, which probabilistically posited a positive relationship between ICP and profitability, was found to be incongruous with empirical evidence. It was, therefore, rejected. Figure 1 presents a graph in the form of a trend of changes in ICP and ROA time periods based on research data for the period 2017-2022. There was an increase in the ICP time period from 2017 to 2018 which was followed by a decrease in ROA. However, in 2019, the decrease in ICP was followed by a decrease in ROA. The increase in the ICP period in 2020 accompanied an increase in ROA. Finally, in 2021 and 2022, the decrease in ICP was followed by an increase in ROA. Based on research data, fluctuations in ICP and ROA periods show an increase in the ICP period followed by an increasing trend in ROA.

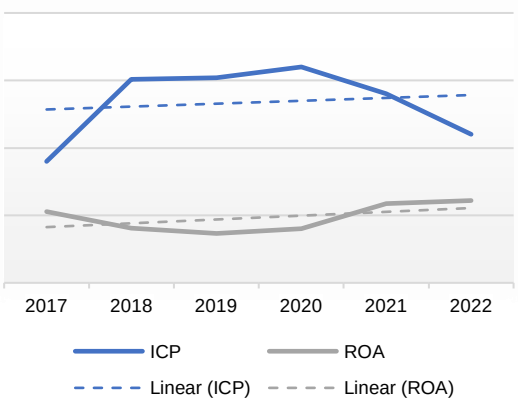

Figure 1. ICP and ROA trends in ASEAN-5 Food and Beverage companies for the period 2017-2022

Corroborative evidence for the study's results is found in the research of Aldubhani et al. (2022), Alvarez et al. (2021), Din (2020), Olaoye et al. (2019), and Amponsah-Kwatiah and Asiamah (2021). And their findings support those of our present research. The study of Aldubhani et al. (2022) found that a longer Inventory Conversion Period (ICP) can result in greater levels of productivity and so enhance a company's profits. The large amount of inventory can indicate a factory with great capacity and guarantee products are delivered under market conditions in particular cases such as during the covid-19 pandemic. Notably, the sampled companies in this study belong to the food and beverage sector, a pivotal driver of GDP and job creation in the ASEAN-5 region. In addition, it plays a crucial role in addressing food needs across the region (PricewaterhouseCoopers, 2020). The COVID-19 pandemic has highlighted the importance of ensuring that healthy food is available, accessible and stable and for communities to afford it (Sundram, 2023).

Hence, the imperative to enhance the accessibility of raw materials for food production has emerged as a pivotal and time-sensitive undertaking, primarily due to the prevailing challenges within the supply chain. The intricacies of inventory and processing in the food and beverage industry are closely intertwined with the prevalent supply chain issues, encompassing constraints on trade activities, labor availability, the movement of goods, elevated transportation logistics costs, and the oscillations in market demand. Notably, the supply chain dynamics within this region remain interdependent, fostering connections between nations and with the global sphere to import essential commodities crucial for the food and beverage industry. These commodities extend beyond consumables to encompass non-food items such as chemicals, packaging materials, machinery, and other essentials.

The onset of crises has amplified consumer apprehensions regarding the availability of food products, precipitating panic buying episodes and abrupt surges in demand, as PricewaterhouseCoopers (2020) documented. This prevailing scenario propels the food and beverage industry towards adaptive measures to address shifts in consumption patterns. A pivotal strategy in this adaptation involves increasing production and managing larger inventories (APF Canada, 2021).

Maintaining a substantial inventory proves instrumental for companies in effectively adapting to shifts in consumption patterns and sudden surges in demand, mitigating the risk of product shortages that could tarnish the company's reputation in the market. This strategic approach ensures that product demand is consistently met, fostering consumer confidence, even amid crises. However, augmenting inventory levels necessitates prudent and well-informed choices to maintain an optimal and reasonable balance. Striking this equilibrium is crucial to avoid the onset of excessive storage burdens and the potential risk of damage to unsold goods. As posited by Azam & Haider (2011), companies that need more time to store their inventory so that the ICP period is longer are able to reduce the cost of interruptions in the production process and other losses due to lack of supply and ready-to-sell products. That way, the company can reduce the company's operating costs. It can be concluded that the optimal inventory level means that the company has the raw materials to continue producing and carrying out sales operations to generate profits and increase profitability. A long ICP period can reduce the cost of business losses due to product scarcity, ordering costs and protect the company from fluctuations in raw material prices due to macroeconomic factors (Blinder & Maccini, 1991; García-Teruel & Solano, 2007).

The Account Payable Period (APP) indicates how long a firm takes to meet its current financial liabilities. An extended APP also means that the company takes their time to pay back its creditors, often using capital intended for operational activities and earning profits out of such deals. On the other hand, this research has rejected the fourth hypothesis that predicted a positive relationship between profitability and employee engagement.

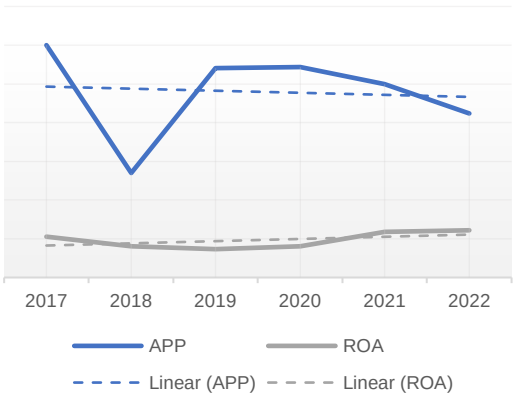

Figure 2. APP and ROA trends in ASEAN-5 Food and Beverage companies for the period 2017-2022

In Figure 2, it can be seen that there has been a decrease in the APP period in 2018, followed by a decrease in ROA. However, in 2019, the increase in the APP period was followed by a decrease in ROA. Then, in 2020, the APP period increased, accompanied by an increase in ROA as well. Conversely, the declining APP in 2021 and 2022 was followed by an increase in ROA. Overall, in the 2017-2022 period, the trend of change shown based on this research

data shows a period of declining APP accompanied by an upward trend in ROA. Several prior investigations conducted by Rey-Ares et al. (2021), Lyngstadaas and Berg (2016), Demiraj et al. (2022), and Singhania and Mehta (2017) align with our research outcomes. Profitable companies, as noted by Nguyen (2020), typically prioritize prompt settlement of accounts payable to foster strong relations with suppliers, enabling them to avail discounts and potential future benefits. On the contrary, less profitable firms suffer from cash constraints and low profitability and tend to postpone their payments in order to improve their credit lines.

In the realm of control variables, the variable Leverage (LEV) exhibits a notable negative and highly significant impact on Return on Assets (ROA) across both regression models. This finding is underpinned by the premise that companies entangled in substantial and uncontrolled debt usage incur significant interest charges, thereby impinging on their capacity to generate profits, as elucidated by Agustia et al. (2020). Turning to the Liquidity variable (LIQ), the results unveil a negative and significant influence on ROA within both models. This counterintuitive negative effect suggests that a heightened level of liquidity does not necessarily translate to increased profitability. Instead, it implies the presence of high idle cash, funds that could be strategically employed by the company for beneficial investments in projects, as posited by Van Horne & Wachowicz (2005).

The inclusion of the COVID-19 pandemic dummy control variable in the study reveals a notable positive and statistically significant relationship with both regression models. This intriguing finding suggests a unique dynamic within the context of food and beverage manufacturing companies, implying that certain entities within this sector have effectively navigated and managed the repercussions of the pandemic. The positive impact may signify successful adaptation, operational efficiency, and effective product innovation and marketing strategies. However, it is crucial to exercise caution in generalizing these findings, considering the inherent diversity among companies. Each business entity possesses distinct characteristics, encompassing varying sizes, product portfolios, supply chain structures, and cost frameworks. Consequently, the effects of the pandemic may manifest differently across different companies. Some entities may thrive amidst increased demand, capitalizing on adaptability, operational efficiency, and effective product innovation and marketing strategies. On the other hand, certain companies may grapple with challenges related to alterations in supply chains or shifts in consumer behavior. Notably, a similar trend of the positive influence of the COVID-19 pandemic on company profitability was corroborated in a study conducted by Purwandari et al. (2023)

5. Conclusion

This research is conducted with the primary goal of investigating the impact of working capital management on the profitability of companies within the food and beverage subsector in ASEAN-5. The methodology employed involves multiple linear regression, and notably, a crisis dimension representing the COVID-19 pandemic situation is incorporated into the model for comprehensive consideration.

By capturing the distinct dynamics and challenges brought about by the global health crisis, the crisis dimension must be included. This will enrich the analysis and provide a more nuanced understanding of the relationship between working capital management practices and firm profitability. Return on assets (ROA), a proxy for business profitability, has a significant impact from each of the independent variables under this study, the cash conversion cycle (CCC), accounts payable period (APP), inventory conversion period (ICP), and receivable conversion period (RCP). It's interesting to note that while the inventory conversion period shows a favourable impact on ROA, the cash conversion cycle, receivable conversion period, and accounts payable period are proven to have a considerable negative impact.

This nuanced understanding underscores the intricate interplay between effective working capital management and overall financial performance in the context of the food and beverage subsector in ASEAN-5. The results underscore the critical significance of the crisis dimension, elucidating the manner in which the COVID-19 epidemic modifies the relationship between working capital management and business profitability. In addition to adding to the body of knowledge regarding the complex relationship between working capital management and firm profitability, this research has applications for businesses looking to improve company profitability. The results are a valuable tool for managers who want to improve the way they handle working capital strategically. Specifically, the incorporation of a crisis dimension, representing the challenges posed by the pandemic, provides a nuanced perspective that enables managers to navigate uncertainties and foster resilience in their financial strategies.

By adapting and implementing strategic measures, companies can position themselves to withstand economic shocks, ensuring sustained financial stability. This research, therefore, acts as a roadmap for managers, offering guidance on how to proactively align working capital management practices with the evolving landscape, especially in industries like food and beverage, where consumer behaviors are subject to constant change. Ultimately, the study empowers companies in the sector to develop robust and adaptive financial strategies that not only weather current challenges but also anticipate and respond to future shifts in the market.

The limitation of this study lies in the scope of the research area, which only covers food and beverage subsector manufacturing companies in ASEAN-5 countries. In addition, this study has focused on one subsector, which is much more specific than other studies, but the results show that, especially for the food subsector, more specific results regarding the effect of working capital management on profitability will be better captured if companies with similar food and beverage products are taken in future studies.

Based on the presented research results and acknowledged limitations, several suggestions emerge for consideration in future studies. One notable recommendation is to update the research time period, allowing for a more current and relevant portrayal of significant issues pertaining to the relationship between the independent and dependent variables under investigation. This adjustment could contribute to a better understanding of the evolving dynamics in this relationship within the context of the present time. Additionally, future research endeavors could explore diverse sectors and regions to further elucidate the relationship between the independent variable of working capital management and the dependent variable of profitability. Investigating these associations in varied environmental conditions may provide a more comprehensive insight into the phenomenon and its nuances. Furthermore, researchers may contemplate incorporating or adjusting variables to align with contemporary conditions, considering both internal and external factors. By doing so, future studies could offer a more intricate and updated perspective on the relationship between the independent variable of working capital management and the dependent variable of company profitability. This approach would enhance the depth and complexity of the analysis, capturing the multifaceted nature of the business landscape and its impact on financial outcomes.

Author Contribution

Author 1: conceptualization, writing original draft, data curation, formal analysis, investigation, methodology. Author 2: review and editing, supervision, validation, visualization.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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