

Structural financing equations with focus on working capital optimization

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Abstract

The purpose of this study is to examine financing with a focus on optimizing working capital with structural equations. The statistical population of the present study consists of all the financial managers and senior managers of the dairy industry sector of Golestan province. The sample size of the research was considered to be 73 people, and the questionnaire was distributed among them. And for this purpose, nine hypotheses were formed, which were analyzed using pls. The results of the data analysis showed that investment factors have an effect on business factors. Facilitation factors do not affect business factors. Production factors do not affect commercial factors. Economic factors affect commercial factors. Performance has an impact on business factors. Business factors affect market factors. Business factors affect organizational factors. Investment factors influence market factors through commercial factors and investment factors influence organizational factors through commercial factors.

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1 Introduction

Capital and its provision are a complex, long-term and analysis-oriented process, the strategic understanding of its behavior requires the proof of strategic forecasting models [38]. As the literature and research records in the mentioned field show this; So that strategic and practical policies have considered working capital as an important factor in financing companies [34, 33]. On the other hand, the strategic and centrality of this level of decision-making and evaluation policies has been consistently felt by experts; As they point out, following a conservative investment policy with short-term investments at a high level has a negative effect on the profitability and value of the company, and the applicability of financing is associated with uncertainty and instability [38]. From the point of view of the theoretical framework of financing, due to the formation of numerous analytical and tactical studies and the lack of a procedure that includes a competent executive model, what is needed is a structure that can be guided through the application of ideas [31]. The financing process in crisis conditions has more strategic importance [13, 11], which is only possible with a strategic and long-term methodology in the context of strategic planning [9]. In a way, with the special conditions that have arisen due to the imposition of economic sanctions, the field of strategic exploration of practical procedures becomes more necessary [19].

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From the point of view of the theoretical framework, the current economic conditions have created fragile and many risks in trade and business. This importance has made it more important to find effective indicators in the financing of economic enterprises. In any business, especially international business groups, financial resources and capital are considered as one of the most important business factors, and entrepreneurs and investors need to provide the necessary capital to produce their products or provide their services. Financing is suitable. At the same time, the change in the production and commercial patterns of individual and independent businesses and the transformation in the formation of businesses based on chains and networks have caused new needs and expectations for business owners and members and organizations of chains and networks. The business should be formed to start and continue its activity and create and develop sustainable value. On the other hand, financial resources and capital needed by companies can be provided in different ways. The ability of companies to plan and effectively manage working capital is one of the main factors in the growth and development of a business [27]. If this capability is formed in the framework of communication and interactions between different businesses along a chain, it can provide sustainable competitive advantages from the perspective of the behavior of the applied value chain of the organization and create far more value for the entire chain [39].

Working capital management refers to the policies and decisions that are applied in the working capital sector in order to change the types of current assets and short-term financing sources. The correct control of this part can have a significant impact on the company's profitability [19]. From the point of view of being value-oriented, management of liquidity cycle and working capital, optimal management of accounts receivable and payable and inventory, management of financial resources, financial risk management, management of legal affairs, insurance and other specialized services required, including needs and The requirements for success in chain-based businesses, along with the management of the flow of goods and information along the supply chain, should be considered in a specialized way with an emphasis on value creation [26]. In a way, one of the issues faced by managers of combined business units is the management of working capital, which plays an important role in the growth and survival of the structure and network of business units. This approach has a distinct role in organizations that experience a healthy life cycle from the perspective of practical effectiveness for financing and creating value for the organization. They believe that effective working capital management is the key to achieving healthy cash flow, and they believe that companies with weak working capital management strategies will lose their competitive advantages and flexibility over time. Finally, the use of supply chain financial management approaches as well as chain financing methods enable companies and organizations in the chain to improve their business by channeling and directing working capital, and as a result, excellence and create more profitability for their shareholders [3, 12, 37]. According to the stated contents, the aim of this research is the structural rates of financing with a focus on the optimization of working capital.

2 An overview of theoretical foundations and research background

Business units need cash to carry out their operational and investment activities. The required cash must be provided through financing activities. Financing can come from different sources. Each financing source has its own effects on the returns and risks of the owners of the unit. Types of financing sources in the country are divided into three categories of financial sources without cost, internal financial sources and financial sources outside the company. Non-cost sources of finance include trade creditors, advances from customers and payables. Internal financial sources of companies include retained earnings and non-cash expenses such as depreciation. Financial sources outside the company include receiving loans from financial institutions or issuing bonds and selling them to the public, issuing preferred shares and finally issuing common shares. Also, in case of capital market defects, domestic and foreign sources of funds cannot completely replace each other. It should be noted that the provision of financial resources by companies is not unlimited and companies have limitations in providing financial resources. All companies can be considered as companies with financial constraints, but the levels of financial constraints are different. In general, companies without financial constraints or with less financial constraints are those that relatively have high liquidity assets and their net assets are high [15].

In terms of time, assets and liabilities can be divided into short-term and long-term, or current and non-current. Current assets are called working capital and the difference between assets and current liabilities is called net working capital. One of the basic issues of financial management is the management of all types of current assets and liabilities. In theory, current assets usually have lower returns than fixed assets. Current liabilities are also less expensive compared to other types of financing methods. Therefore, the combination of current assets and liabilities is very important to each other and to the total assets; Because their inappropriateness, due to obtaining low returns or creating high costs, reduces the value of the company. Therefore, the financial manager must first create a suitable combination between current assets and total assets on the one hand, and liabilities and total liabilities and equity on the other hand, secondly in relation to the components of working capital and the amount of each. to make decisions in a way that ultimately

realizes the goal of maximizing the value of the company. Therefore, working capital management is the management of all types of current assets, including cash, short-term securities, documents and accounts receivable, inventory and the like, and current liabilities or short-term financing sources, including documents and accounts payable and other salaries and benefits to be paid and the like, and determining the optimal value for each is determined [7].

One of the comprehensive measures of working capital management is the cycle of conversion to cash, which can increase the company's profitability by reducing the time of blocking cash in working capital. This can be done by reducing the inventory conversion period by selling goods to customers faster or by extending the payables period by delaying payments or collecting claims as quickly as possible. On the other hand, shortening the cash conversion cycle can harm the company's profitability. Shortening inventory conversion period can increase shortage costs. Reducing the receivables collection period can lead to the loss of the company's customers, and the delay in the payments leads to the loss of the company's commercial credit. A shorter cash-to-cash cycle is associated with a higher shortage cost, and a longer cash-to-cash cycle is associated with a higher cost of administration and management. Achieving optimal levels of inventory, receivables, and payables minimizes the cost of maintaining inventory, receivables, and payables, and maximizes sales, profitability, and market value [26].

Working capital puts the company in a better position in terms of obtaining loans and how to access short-term credit or more suitable liquidity of current assets. Obviously, in working capital management, other long-term decisions that ultimately affect working capital, such as long-term financing; are also important. Working capital actually expresses the performance of current assets and liabilities. In fact, working capital management is an important part of planning for short-term financing and includes managing inventory of materials and goods, accounts receivable and payable. Working capital is one of the sources of financing, especially for small and medium-sized and growing companies. Financial managers of business units face daily decisions related to working capital management. For example, maintaining a high volume of inventories reduces the costs of possible interruptions in the production cycle or commercial losses due to the lack of products, reducing supply costs and protecting against price fluctuations, and on the other hand, the company's sales from various aspects, credit gives commercial [19].

2.1 Working Capital Management

Model(1)

$$Q_{it} = \beta_0 + \beta_1 NTC_{it} + \beta_2 NTC_{it}^2 + \beta_3 Size_{it} + \beta_4 Lev_{it} + \beta_5 growth_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (2.1)$$

in which, following Agrol and Nober [4], Thomson et al.[36] and Cablero et al.[14], Tween's Q ratio is used as a measure of companies' performance, which is equal to [29]

Model(2)

$$Q_{it} = \frac{(\text{Market Value of Equity}_{it} + \text{Book Value of Debt}_{it})}{(\text{Book Value of Assets}_{it})} \quad (2.2)$$

NTC represents the company's net business cycle; Hence, this scale is a dynamic scale of permanent liquidity management that provides a simple estimate of the additional financing considered relative to working capital [30]. A low NTC means less investment in working capital. The use of this variable to measure working capital is to avoid the shortcomings of traditional liquidity ratios such as the current ratio and the current ratio; Therefore, following Shin and Sonen [30] and Cablero et al.[14]), the net business cycle has been used to measure working capital, which is equal to [6]

Model(3)

$$NTC_{it} = \left(\left(\frac{\text{Accounts Receivable}_{it}}{\text{Sales}_{it}} \right) * 365 + \left(\frac{\text{Inventories}_{it}}{\text{Sales}_{it}} \right) * 365 - \left(\frac{\text{Accounts payable}_{it}}{\text{Sales}_{it}} \right) * 365 \right) / 100 \quad (2.3)$$

NTC is equal to the square of NTC and is included in the research model to investigate the non-linear relationship between working capital and company performance. Size indicates the size of the company, which was calculated using the natural logarithm of the company's assets. Levit represents the financial leverage of the company and is equal to the ratio of the total liabilities to the total assets of the company. growth indicates the growth of the company and is equal to the total assets at the end of the period minus the total assets at the beginning of the period, divided by the

total assets at the beginning of the period. ROA_{it} represents the company's return on assets and is equal to the ratio of net profit to the company's total assets. To measure the relationship between working capital and the performance of companies, also considering the variable of supply constraints Financially, the following regression model is used.

Model(4)

$$Q_{it} = \beta_0 + (\beta_1 + \delta_1 DFC_{it}) NTC_{it} + (\beta_2 + \delta_2 DFC_{it}) NTC_{it}^2 + \beta_3 Size_{it} + \beta_4 Lev_{it} + \beta_5 growth_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \quad (2.4)$$

DFC represents the dummy variable that indicates the presence or absence of financial constraints. If a company has financial constraints, this variable will be one, otherwise it will be zero. To determine companies with financial constraints and companies without financial constraints, three indices KZir, KZ and WW were used; In this way, by using the formulas of each index for each company, a number is calculated; Then the average of all companies was calculated. Companies above the middle of each index have financial restrictions, and companies below the middle of the above indexes will be considered as companies without restrictions. KZ is the measure of financial constraint that Kaplan and Zingales [24] presented and it is as follows [25]:

Model(5)

$$KZ = -1.002 * \left(\frac{cash\ flow_{it}}{total\ assets_{it}} \right) + 0.283 * \frac{M_{it}}{B_{it}} + 3.139 * \left(\frac{long\ debt_{it}}{total\ assets_{it}} \right) - 39.368 * \left(\frac{div_{it}}{total\ assets_{it}} \right) - 1.315 * \left(\frac{cash\ holding_{it}}{total\ assets_{it}} \right) \quad (2.5)$$

where Cash Flow represents the company's net cash flow, Total Assets represents the company's total assets, Long Debt represents the company's total liabilities, Divi represents the company's dividend, Holding Cash represents the cash held and is equal to the company's total cash and short-term investments. Tehrani and Hesarzadeh [35] presented the model of Kaplan and Zingales [24] according to the coordinates of Iran, which is as follows [25]:

Model(6)

$$KZ_{IR} = 17.33 - 37.486 \left(\frac{cash\ holding_{it}}{total\ assets_{it}} \right) - 15.21 \left(\frac{div_{it}}{total\ assets_{it}} \right) + 3.39 \left(\frac{debt_{it}}{total\ assets_{it}} \right) - 1.402 \frac{M_{it}}{B_{it}} \quad (2.6)$$

where M_{it} represents the market value of the company, B_{it} represents the book value of the company. WW is the measure of financial constraints presented by Whited et al. [40]. This measure has also been used in the researches of Badavar et al.[8] and Hachit and Heydari [23] and the coefficients have been explained in the country [25]:

Model(7)

$$WW = -0.091 CF_{it} - 0.062 DivDummy + 0.02 TLTD_{it} - 0.044 LNTA_{it} + 0.102 ISG_{it} - 0.035 SG_{it} \quad (2.7)$$

where CF is equal to the ratio of net cash flow to the total assets of Divit company, the virtual variable and for companies that have had dividends in the period, it will be equal to one and otherwise, it will be equal to zero. TLTD is equal to the ratio of total long-term liabilities to the total assets of the company, LNTA is equal to the natural logarithm of total assets, ISG represents the sales growth of the industry in which the company is located, and SGi is equal to the sales growth of the company.

2.2 Working Capital efficiency

The following model was used to measure working capital efficiency.

Model(8)

$$WCME_{it} = \beta_0 + \beta_1 Ownership\ Concentration_{it} + \beta_2 Board\ Size_{it} + \beta_3 Board\ Independence_{it} + \beta_4 Lev_{it} + \beta_5 Firm\ Size_{it} + \beta_6 ROA_{it} + \beta_7 CFL_{it} + \beta_8 GROW_{it} + \beta_9 CEX_{it} + \varepsilon_{it} \quad (2.8)$$

In this research, in order to measure the effectiveness of working capital management (WCME) from four criteria. The receivables collection period, inventory conversion period, accounts payable payment period, and cash conversion cycle have been used [22]. Periodicals Collection; It is the average number of days spent to collect funds from customers, which is calculated using equation (2.2).

Model(9)

$$D_{AR} = \frac{\text{Accounts Receivables}}{\text{Sales}} \times 365 \quad (2.9)$$

In the above relationship, DAR represents the period of collection of claims, Accounts Receivables and Sales of the company. inventory conversion period; It is the average number of days that the balances. The goods are processed and sold by the company. This criterion is also calculated using (model 2.10).

Model(10)

$$D_{INV} = \frac{\text{Inventories}}{\text{Cost of Good Sold}} \times 365 \quad (2.10)$$

In the above relationship, DINV represents the inventory conversion period, Inventories and Cost of Good Sold. Debt payment period; It is the average number of days it takes for the company to pay the necessary funds to suppliers and creditors. This criterion is obtained using model 2.11.

Model(11)

$$D_{AP} = \frac{\text{Accounts Payables}}{\text{Cost of Good Sold}} \times 365 \quad (2.11)$$

In the above relation also; DAP stands for debt payment period and Accounts Payables. The cash conversion cycle is the number of days that the company's resources are invested in business operations. This criterion, which is the most common index used for working capital management, has been used in many domestic and foreign researches. It is calculated through model (2.12)

Model(12)

$$CCC = (D_{AR} + D_{INV}) - D_{AP} \quad (2.12)$$

Although companies' high investment in inventory reduces risk, it also reduces profitability. Therefore, the financial manager should be able to identify the optimal amount of inventory in which the opportunity cost and maintenance cost are minimized, and have an optimal management of the working capital. The ultimate goal of any company is to create value for its stakeholders and is profitable. Also, maintaining liquidity is one of the important goals of the business unit; But the problem is that the increase in the company's profit in general does not lead to an increase in liquidity and these two strategic goals are not always aligned and in the same direction. If the increase in profit depends on the consumption of cash, then it may cause serious problems. Therefore, a distinction should be made between these two strategic goals [16]. Alvarez et al.[5] investigated working capital management and financing. The results of the hypothesis test showed that there is a significant direct relationship between working capital management and external financing. Bello et al [10] investigated working capital and profitability indicators. The results of fitting the introduced models show that there is no significant relationship between working capital and profitability indicators. Rachman et a.[28] investigated financing methods in working capital management. The results showed that financing through the issuance of shares has an effect on working capital management. Financing through borrowing has an effect on working capital management. Chen et al. [17] investigated financing and short- and long-term debt. The results of the research show that equity has the greatest impact on the financing of the sample companies with a factor of about 25%. Abdulle et al. [1] investigated the methods of financing investment. The results show a significant impact with a probability of 99% of financing from the method of issuing ordinary shares, accumulated profits and bank loans on investment. Afzalnia [2] investigated the effect of financial leverage on working capital management of insurance companies that are members of the Tehran Stock Exchange. The results of the research hypothesis test show that financial leverage has a significant and negative effect on working capital management of insurance companies that are members of the Tehran Stock Exchange. Emami and Farid [20] discussed working capital, company performance and financial constraints. The obtained results indicate that there is an inverse U-shaped relationship between working capital and company performance, and the optimal level of working capital is lower for companies that have more financial constraints (other than interest coverage). Soltani et al. [32] investigated the effect of working capital and financial flexibility on competitiveness. The results of this research show that working capital management has a wide impact on market competitiveness and operational efficiency. The ability of working capital has a positive effect on the competitive power in the product market. But with the reduction of the ability of working capital to a certain level, this influence will be weakened. According to the stated contents, the assumptions of the research are as follows:

1. Investment factors affect business factors.
2. Facilitation factors affect commercial factors.
3. Production factors affect the factors of commercial factors.
4. Economic factors affect commercial factors.
5. Functional factors affect commercial factors.
6. Commercial factors affect market factors.
7. Commercial factors affect organizational factors.
8. Investment factors affect market factors through commercial factors.
9. Investment factors affect organizational factors through business factors.

According to the above assumptions, the conceptual model is presented as follows:

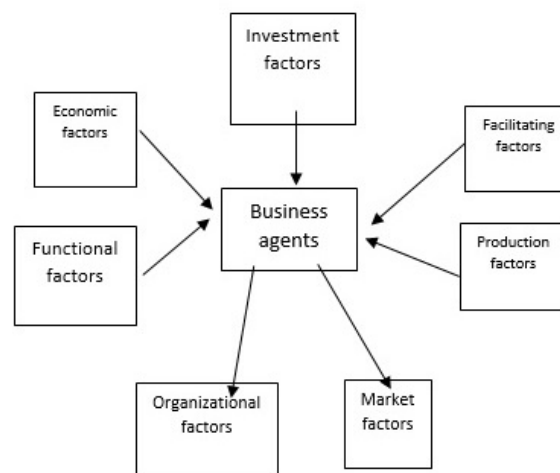


Figure 1: Conceptual model of assumptions

3 Method

The present study is a survey that was formed using a researcher-made questionnaire. In order to confirm the questionnaires, experts and professors in the field of accounting and finance were consulted and at first it was sent to ten of the statistical sample, and then after asking the opinions of the professors, experts and selected statistical sample, an adjusted questionnaire and a final questionnaire were formed, which the statistical sample in this study was sent and the questionnaires were designed based on 5 Likert scales. The statistical population of the current research in the quantitative part consists of all the financial managers and senior managers of the dairy industry sector of Golestan province. Due to the lack of access to the amount of community variance to use Cochran's formula, Morgan's sample size estimation table was used to select research samples. Considering the size of the population in the quantitative stage of 90 people and referring to Morgan's sample size estimation table, the research sample size was considered to be 73 people, and the questionnaire was distributed among them. Data analysis was done using Smart PLS software with structural equation modeling method, confirmatory factor analysis (examination of research measurement model) and path analysis (examination of relationships between model components).

4 Research Findings

4.1 Descriptive Statistics

In this section, the demographic characteristics of the examined sample are described in the quantitative section, according to service history and educational qualification.

Table 1: Frequency distribution of sample members based on gender

Variable		Abundance	Percent
Gender	Man	62	83.8
	Female	12	16.2
	Total	74	100.0

Gender: Table 1. The results of the frequency of respondents are expressed according to whether they are male or female.

Service history: Table 2 shows the distribution of the studied sample according to service history. It can be seen that the lowest frequency (1.4%) is related to the respondents with less than 5 years of service experience and the highest frequency is related to the 11-15 years group.

Table 2: Frequency distribution of sample members based on service history

Variable		Abundance	Percent
Years of service	under 5 years	1	1.4
	5 to 10 years	6	8.1
	11 to 15 years	37	50.0
	16 to 20 years	16	21.6
	More than 20 years	14	18.9
Total		74	100

Educational qualification: Table 3 shows the distribution of members of the studied sample according to educational qualification. It can be seen that the highest frequency (42%) is related to people with a bachelor's degree.

Table 3: Frequency distribution of sample members based on education

Variable		Abundance	Percent
degree of education	diploma	10	13.5
	Masters	42	56.8
	Masters and Ph. D	22	29.7
Total		74	100

4.2 Confirmatory factor analysis (research measurement model)

Factor loadings are calculated by calculating the correlation value of the indicators of a structure with that structure. If this value is equal to or greater than the value of 4.0, it indicates that the variance between the structure and its indicators is greater than the variance of the measurement error of that structure and the reliability of the measurement model is acceptable [15].

Diagrams 2 and 3 show the measurement model of the impact dimensions of commercial factors, market factors and organizational factors in the mode of standard estimation and significant coefficients.

According to graphs 3 and 2 and table 4, the significance of the factor load of almost all indicators is more than 1.96, so indicators such as performance factors, economic factors and investment factors were not removed from the model.

Table 4: Factor loading and significant numbers of the model for measuring empirical factors on customer orientation and product competition

Variables	Operational burden	Test statistics	Meaningful	Result
A_amalkardi <- functional factors	1			confirmation

continued ...

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Variables	Operational burden	Test statistics	Meaningful	Result
A_bazar <- organizational factors	1			confirmation
A_sazmani <- market factors	1			confirmation
A_tashilati <- facilitating factors	1			confirmation
A_tejari <- business agents	1			confirmation
A_tolidi <- production factors	1			confirmation
SN1 <- inappropriate investment	0.555	4.263	0	confirmation
SN2 <- inappropriate investment	0.747	10.551	0	confirmation
SN3 <- inappropriate investment	0.762	11.112	0	confirmation
SN4 <- inappropriate investment	0.811	12.908	0	confirmation
SN5 <- inappropriate investment	0.718	7.514	0	confirmation
a_egtesadi <- economic factors	1			confirmation
a_sarmaye <- investment agents	1			confirmation
am1 <- management function	-0.634	1.037	0.3	rejection
am2 <- management function	0.516	1.222	0.222	rejection
am3 <- management function	0.45	1.106	0.269	rejection
am4 <- management function	0.281	0.892	0.373	rejection
amm1 <- management function_	0.852	9.151	0	confirmation
amm2 <- management function_	0.503	3.171	0.002	confirmation
amm3 <- management function_	0.859	7.099	0	confirmation
at1 <- trade credit	0.623	1.441	0.15	rejection
at2 <- commercial credit	0.931	2.632	0.009	confirmation
bb1 <- international market	-0.382	0.711	0.478	rejection
bb2 <- international market	0.816	1.632	0.103	rejection
bs1 <- economic instability	0.943	2.608	0.009	confirmation
bs2 <- economic instability	0.62	2.003	0.046	confirmation
bs3 <- economic instability	0.498	1.403	0.161	rejection
fs1 <- economic opportunities	-0.363	0.751	0.453	rejection
fs2 <- economic opportunities	-0.056	0.164	0.87	rejection
fs3 <- economic opportunities	0.857	1.447	0.149	rejection
m1 <- product	-0.15	0.339	0.735	rejection
m2 <- product	0.973	1.75	0.081	confirmation
m3 <- product	0.285	0.887	0.376	rejection
m4 <- product	-0.125	0.284	0.777	rejection
mzr1 <- competitive advantage	0.869	4.755	0	confirmation
mzr2 <- competitive advantage	0.473	1.866	0.063	confirmation
mzr3 <- competitive advantage	0.693	3.295	0.001	confirmation
p1 <- price	0.945	1.913	0.056	confirmation
p2 <- price	0.291	0.784	0.433	rejection
p3 <- price	0.006	0.015	0.988	rejection
rsh1 <- job satisfaction	1	2.241	0.025	confirmation
rsh2 <- job satisfaction	0.55	1.597	0.111	rejection
rsh3 <- job satisfaction	0.069	0.155	0.877	rejection
s1 <- investment	0.801	4.241	0	confirmation
s2 <- investment	0.644	2.898	0.004	confirmation
s3 <- investment	0.453	1.665	0.097	confirmation
s4 <- investment	0.868	4.743	0	confirmation
s5 <- investment	0.552	2.471	0.014	confirmation
sanat1 <- type of industry	0.976	3.504	0	confirmation
sanat2 <- type of industry	0.713	2.278	0.023	confirmation
shb1 <- market conditions	-0.441	0.987	0.324	rejection
shb2 <- market conditions	0.003	0.009	0.993	rejection
shb3 <- market conditions	0.729	1.324	0.186	rejection
t1 <- sanctions	0.789	2.672	0.008	confirmation
t2 <- sanctions	0.914	3.288	0.001	confirmation
tsb1 <- banking facility	0.964	2.033	0.043	confirmation
tsb2 <- banking facilities	0	0	1	rejection

continued ...

... continued

Variables	Operational burden	Test statistics	Meaningful	Result
tsbg1 <- Illegal banking facility	0.743	3.755	0	confirmation
tsbg2 <- Illegal banking facility	0.911	6.67	0	confirmation

Considering the significance of the factor loadings of most of the indicators of the measurement model, the impact of business factors on the market and organizational factors is examined in the continuation of the validity and reliability of the measurement model.

- **Cronbach's alpha and composite reliability**

To better measure reliability in the PLS method, both Cronbach's alpha and composite reliability criteria are used [18]. If the value of these two criteria is higher than 7.0, the reliability indicator is acceptable. According to Table No. 5, the value of these criteria for all the structures of the model is higher than 7.0, which indicates the appropriate reliability of the model.

- **Convergent validity**

Convergent validity represents the average variance extracted between each construct and its indicators. Fornell and Larcker [21] have introduced the appropriate value for AVE to be 0.5 or higher. As the results of Table 5 show, the AVE value of all variables except media support is greater than 0.5, which indicates acceptable convergent validity of the measurement model.

- **Divergent validity**

Divergent validity is the third criterion for measuring measurement models in PLS. Fornell and Larcker method was used to check this criterion. Fornell and Larcker [21] state: Divergent validity is acceptable when the average square root of the extracted variance (AVE) for each construct is greater than the shared variance between that construct and other constructs in the model. According to the data of the three-square root tables ($AVE\sqrt{}$), all the first order variables (principal diameter) are more than the maximum correlation between them with other hidden variables, which indicates the appropriate divergent validity and good fit of the measurement model.

Table 6: Measuring divergent validity with Fornell and Larcker method

	Business credit	international market	Economic instability	Sanction	Bank facilities	Illegal banking facilities	Job Satisfaction
Business credit	0.792						
international market	-0.002	0.637					
Economic instability	0.07	-0.001	0.712				
Boycott	0.173	0.009	0.139	0.854			
Bank facilities	0.044	0.128	-0.152	-0.084	0.682		
Illegal banking facilities	-0.018	-0.31	0.079	0.011	0.207	0.831	
Job Satisfaction	-0.074	-0.315	0.064	-0.024	0.043	0.728	0.66
investment	0.223	0.062	0.111	0.17	-0.069	-0.047	-0.061
Bad investment	0.45	-0.104	0.387	0.182	-0.028	0.111	0.15
Market conditions	0.033	-0.115	0.054	0.043	-0.26	0.149	0.217
Management performance	-0.041	-0.012	0.007	-0.449	-0.036	-0.031	0.042
management function	0.101	-0.354	0.22	0.153	0.168	0.341	0.195
Economic factors	-0.003	-0.011	0.183	0.156	-0.008	0.198	0.153

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Market factors	0.305	-0.139	0.086	-0.13	-0.193	0.112	0.186
Business agents	0.131	-0.282	0.079	-0.063	-0.041	0.164	0.2
Facilitating factors	0.305	0.068	0.034	-0.128	-0.169	-0.243	-0.142
Production factors	0.096	-0.253	0.333	0.036	-0.163	0.085	0.19
Organizational factors	0.285	-0.113	0.207	0.013	-0.069	-0.011	-0.095
Investment factors	0.335	-0.225	0.177	0.045	-0.12	0.073	0.014
Functional factors	0.042	-0.386	0.208	0.006	-0.256	0.196	0.361
Economic opportunities	0.127	-0.036	0.054	0.359	0.009	-0.088	0.063
Price	-0.01	-0.142	0.241	0.327	-0.148	0.051	0.215
the product	-0.076	-0.347	0.04	-0.024	-0.003	0.329	0.493
Competitive Advantage	0.193	-0.126	0.293	0.065	-0.14	-0.043	-0.067
Type of industry	0.231	-0.12	0.031	0.319	-0.032	-0.163	-0.128
	investment	Unappropriate investment	Market condition	Management practice	Management practice	Economic agents	Market agents
Business credit							
international market							
Economic instability							
Boycott							
Bank facilities							
Illegal banking facilities							
Job Satisfaction							
investment	0.681						
Bad investment	0.362	0.724					
Market conditions	0.141	0.113	0.492				
Management performance	-0.188	-0.116	-0.178	0.487			
management function	0.264	0.186	0.068	-0.29	0.757		
Economic factors	-0.206	0.018	-0.022	0.075	0.115	1	
Market factors	0.003	0.112	0.238	0.027	0.034	0.347	1
Business agents	0.064	0.29	0.086	-0.1	0.207	0.349	0.403
Facilitating factors	0.158	0.169	0.044	-0.019	-0.036	0.356	0.478
Production factors	0.103	0.393	0.332	-0.227	0.097	0.199	0.45
Organizational factors	0.14	0.447	0.065	-0.289	0.209	0.208	0.281
Investment factors	0.286	0.603	0.101	-0.083	0.079	-0.024	0.169

continued ...

... continued

Functional factors	0.071	0.016	0.28	0.016	0.353	0.217	0.393
Economic opportunities	-0.087	0.033	-0.087	0.164	0.03	0.489	0.045
Price the product	0.237	0.2	0.084	-0.079	0.236	0.204	0.019
Competitive Advantage	0.016	-0.036	0.185	0.006	0.336	0.134	0.127
Type of industry	0.279	0.296	0.221	-0.032	0.249	0.334	0.245
	0.101	0.255	0.198	-0.421	0.174	-0.053	0.114
	Commercial agents	Facilities agents	Productive agents	Organizational agents	Investing agents	Practical agents	Economic chances
Business credit							
international market							
Economic instability							
Boycott							
Bank facilities							
Illegal banking facilities							
Job Satisfaction							
investment							
Bad investment							
Market conditions							
Management performance							
management function							
Economic factors							
Market factors							
Business agents	1						
Facilitating factors	0.348	1					
Production factors	0.313	0.329	1				
Organizational factors	0.388	0.403	0.552	1			
Investment factors	0.274	0.215	0.278	0.354	1		
Functional factors	0.386	0.2	0.285	0.101	-0.014	1	
Economic opportunities	0.074	0.155	0.122	0.079	-0.162	0.083	0.538
Price the product	0.175	-0.099	0.16	0.013	0.142	0.278	0.165
Competitive Advantage	0.221	-0.114	0.191	-0.036	-0.206	0.492	0.045
Type of industry	0.289	0.274	0.281	0.199	0.326	0.245	0.179
	0.035	0.006	0.209	0.202	0.2	0.141	0.077

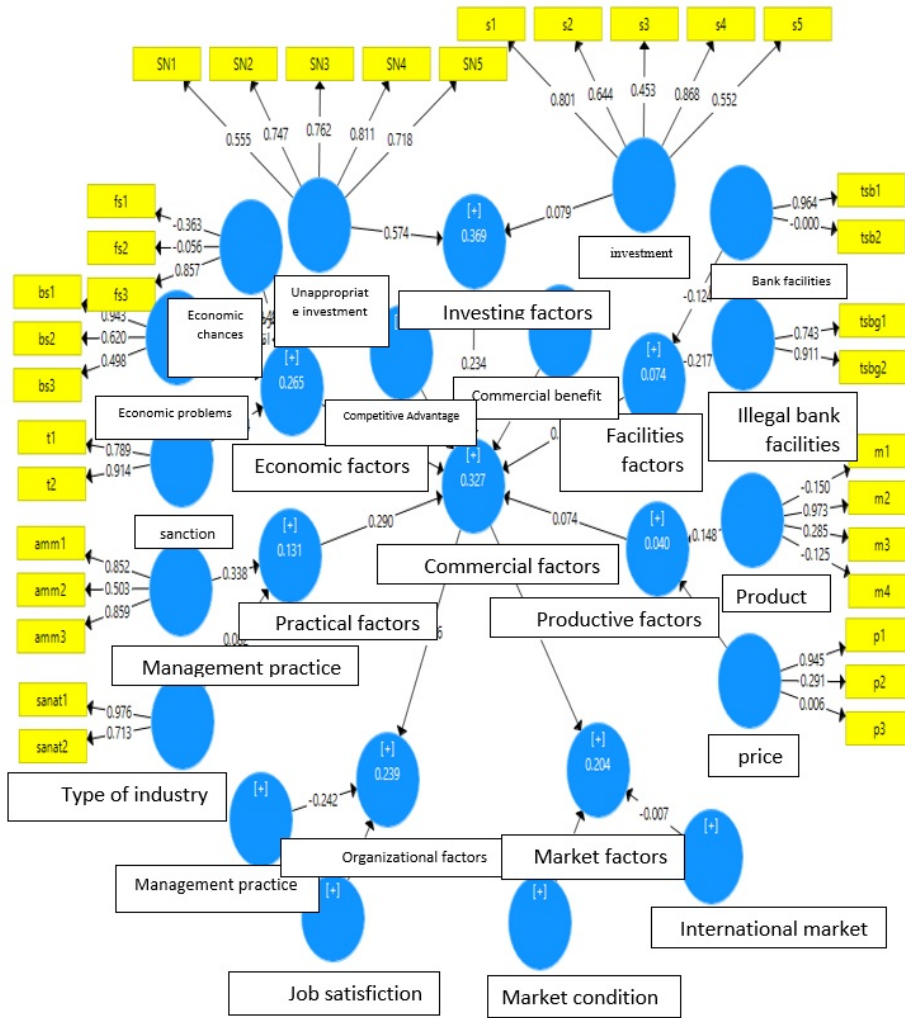


Figure 2: Confirmatory factor analysis of the impact of various factors on commercial, market and organizational factors

4.3 structural model (path analysis)

Path analysis (structural model) is a technique that shows the relationships between research variables simultaneously. The purpose of path analysis is to identify the causality (effect) between the variables of the research conceptual model. Table 8. They show the structural model of the research in the form of standard coefficients and significant numbers.

The first hypothesis: investment factors have an effect on commercial factors. In testing the desired hypothesis using the structural equation model, the obtained coefficients are significant when their significance test value is greater than 1.96. As can be seen in Table 8, the standard coefficient of the impact of investment factors on commercial factors is equal to 0.234. Considering that the observed t-statistic is smaller than 1.96, the significance of the obtained coefficient is confirmed and thus the hypothesis 1 will be accepted.

The second hypothesis: Facilitation factors have an effect on business factors. As can be seen in Table 8, the standard coefficient of facilitation factors over commercial factors is equal to 0.135. Considering that the observed t-statistic is smaller than 1.96, therefore, the significance of the obtained coefficient is not confirmed, and thus hypothesis 2 will not be accepted.

The third hypothesis: production factors have an effect on business factors. As can be seen in Table 13-4, the standard coefficient of production factors on commercial factors is equal to 0.074. Considering that the observed t-statistic is less than 1.96, therefore, the significance of the obtained coefficient is not confirmed and thus hypothesis 3 will not be accepted.

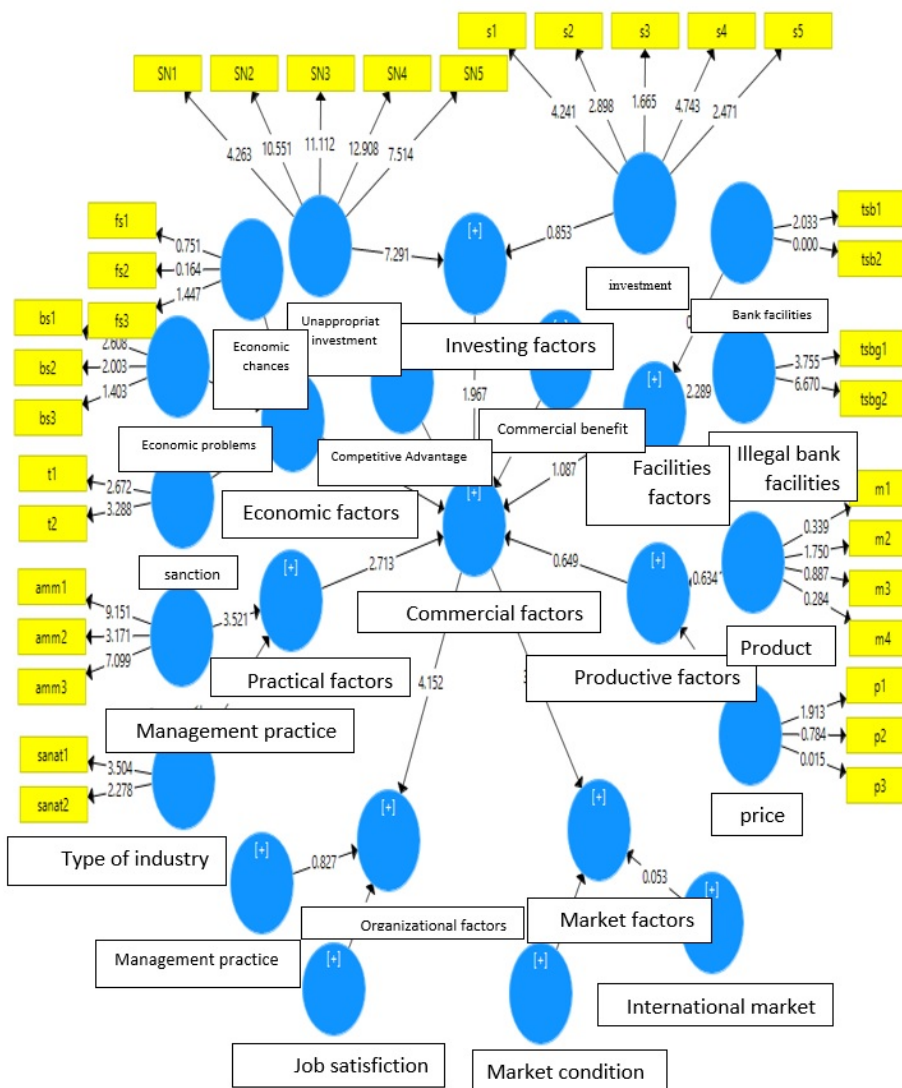


Figure 3: Confirmatory factor analysis of the impact of various factors on commercial, market and organizational factors

The second hypothesis: Facilitation factors have an effect on business factors. As can be seen in Table 8, the standard coefficient of facilitation factors over commercial factors is equal to 0.135. Considering that the observed t-statistic is smaller than 1.96, therefore, the significance of the obtained coefficient is not confirmed, and thus hypothesis 2 will not be accepted.

The third hypothesis: production factors have an effect on business factors. As can be seen in Table 13-4, the standard coefficient of production factors on commercial factors is equal to 0.074. Considering that the observed t-statistic is less than 1.96, therefore, the significance of the obtained coefficient is not confirmed and thus hypothesis 3 will not be accepted.

The fifth hypothesis: functional factors have an effect on business factors. In testing the desired hypothesis using the structural equation model, the obtained coefficients are significant when their significance test value is greater than 1.96. As can be seen in Table 8, the standard coefficient of the effect of performance factors on commercial factors is equal to 0.29. Considering that the observed t-statistic is less than 1.96, the significance of the obtained coefficient is confirmed and thus hypothesis 5 will be accepted.

Sixth hypothesis: business factors have an impact on market factors. In testing the desired hypothesis using the structural equation model, the obtained coefficients are significant when their significance test value is greater than 1.96. As can be seen in Table 8, the standard coefficient of the effect of business factors on market factors is equal to 0.384. Considering that the observed t-statistic is less than 1.96, therefore the significance of the obtained coefficient

Table 5: Convergent reliability and validity index values of the measurement model of business factors on market factors and organizational factors

Variables	Cronbach's alpha	Composite ReliabilityCR	Average variance extracted AVE
Business credit	0.454	0.764	0.627
international market	0.364	0.137	0.406
Economic instability	0.562	0.742	0.507
Boycott	0.642	0.843	0.729
Bank facilities	0.419	0.465	0.465
Illegal banking facilities	0.571	0.815	0.691
Job Satisfaction	0.572	0.607	0.436
investment	0.729	0.804	0.464
Bad investment	0.774	0.844	0.524
Market conditions	0.671	0.036	0.242
Management performance	0.516	0.11	0.238
management function	0.631	0.793	0.573
Economic factors	1	1	1
Market factors	1	1	1
Business agents	1	1	1
Facilitating factors	1	1	1
Production factors	1	1	1
Organizational factors	1	1	1
Investment factors	1	1	1
Functional factors	1	1	1
Economic opportunities	0.461	0.083	0.29
Price	0.536	0.433	0.326
the product	0.449	0.248	0.266
Competitive Advantage	0.53	0.729	0.486
Type of industry	0.703	0.841	0.73

Table 7: Measuring divergent validity with Fornell and Larcker method

	Price	Product	Competitive Advantage	Type of industry
price	0.571			
Product	0.594	0.516		
Competitive Advantage	0.292	0.124	0.697	
Type of industry	0.147	0.042	0.101	0.855

is confirmed and thus hypothesis 6 will be accepted.

Seventh hypothesis: business factors have an impact on organizational factors. In testing the desired hypothesis using the structural equation model, the obtained coefficients are significant when their significance test value is greater than 1.96. As can be seen in Table 8, the standard coefficient of the effect of commercial factors on organizational factors is equal to 0.396. Considering that the observed t-statistic is less than 1.96, therefore, the significance of the obtained coefficient is confirmed and thus hypothesis 7 will be accepted.

The eighth hypothesis: investment factors have an impact on market factors through commercial factors. In testing the desired hypothesis using the structural equation model, the obtained coefficients are significant when their significance test value is greater than 1.96. As can be seen in Table 8, the standard coefficient of the effect of investment factors on business and the effect of business factors on market factors are both significant, thus hypothesis 8 will be accepted.

Ninth hypothesis: investment factors have an impact on organizational factors through business factors. In testing the desired hypothesis using the structural equation model, the obtained coefficients are significant when their significance test value is greater than 1.96. As can be seen in Table 8, the standard coefficient of the effect of investment factors on business and the effect of business factors on market factors are both significant, thus hypothesis 9 will be accepted.

Table 8: The results of examining structural relationships

Dimensions	Path Coefficients	Amare T	Meaningful
Trade Credit -> Trade Factors	-0.009	0.078	0.938
International market -> market factors	-0.007	0.053	0.958
Economic instability -> economic factors	0.163	1.14	0.255
Sanction -> economic factors	-0.044	0.367	0.714
Banking facilities -> facilitating factors	-0.124	0.717	0.474
Illegal banking facilities -> facilitating factors	-0.217	2.289	0.023
Job satisfaction -> organizational factors	-0.164	0.98	0.328
Investment -> Investment factors	0.079	0.853	0.394
Inappropriate investment -> investment factors	0.574	7.291	0
Market conditions -> Market factors	0.204	0.882	0.378
Management function -> Organizational factors	-0.242	0.827	0.408
Management performance -> functional factors	0.338	3.521	0
Economic factors -> business factors	0.226	2.292	0.022
Business factors -> Market factors	0.384	3.772	0
Business factors -> organizational factors	0.396	4.152	0
Facilitation factors -> business factors	0.135	1.087	0.278
Production factors -> business factors	0.074	0.649	0.517
Investment factors -> business factors	0.234	1.967	0.05
Functional factors -> business factors	0.29	2.713	0.007
Economic opportunities -> economic factors	0.496	1.145	0.253
Price -> factors of production	0.072	0.417	0.677
Product -> production factors	0.148	0.634	0.526
Competitive advantage -> business factors	0.011	0.091	0.928
Industry Type -> Functional Factors	0.082	0.57	0.569

Table 9: Table of R2 values

Variable	R ²	Assessment
Economic factors	0.265	medium
Market factors	0.204	medium
Business agents	0.327	medium
Facilitating factors	0.074	weak
Production factors	0.04	weak
Organizational factors	0.239	medium
Investment factors	0.369	medium
Functional factors	0.131	medium

4.4 Criteria for fitting the structural model of the research:

1. The coefficient of determination criterion (R2):

To check the fit of the structural model of the research, the coefficient of determination of endogenous hidden variables of the model is calculated. R2 is a criterion that is used to connect the measurement part and the structural part of structural equation modeling and it shows the effect that an exogenous variable has on an endogenous variable. One of the main advantages of the PLS method is that this method can reduce errors in measurement models or increase the variance between constructs and indicators. According to Table 9, the fit of the model based on this criterion is evaluated as average.

5 Conclusion

The purpose of this study is to examine financing with a focus on optimizing working capital with structural equations. In the current challenging economy with increasing environmental pressures and limited external resources, current assets and liabilities, i.e., working capital of economic enterprises, are of great importance, and the optimal management of working capital of enterprises can be considered as an advantage for them. It can be the basis of financial management is working capital and it can be claimed that all business activities require capital. Companies can have an optimal level of working capital that maximizes their value. Abundant inventory and generous credit policy can lead to increased sales. High inventory reduces the risk of inventory shortage, and trade credit can increase sales

because it allows customers to evaluate the quality of the product before payment. A higher level of working capital requires more financing, and as a result, companies face additional financing costs, which increases the probability of company bankruptcy. The combination of these positive and negative effects of working capital leads to the prediction of a non-linear relationship between investment in working capital and company value. In this regard, empirical evidence shows that investment in working capital depends on the financing limitations of companies, and companies that have more internal financing capacity and have access to the capital market maintain a higher level of working capital. Investments in accounts receivable and inventory represent a significant portion of a company's assets, while trade credit is an important source of funds for most companies. There is a substantial literature on credit policies and inventory management, but few attempt to integrate both credit policies and inventory management decisions. There are also various explanations for the motivation of companies to maintain positive working capital. First, investing more in long-term trade credits and inventory may increase the company's performance for several reasons, for example, more inventory can reduce procurement and supply costs and price fluctuations, and avoid interruptions in the production process and loss. Business is prevented due to lack of products. It also allows companies to improve their services for customers and avoid high production costs caused by high fluctuations in production. On the other hand, the granting of trade credit may increase the company's sales, because it encourages customers to obtain goods during times of low demand and allows buyers to review and check the quality of their goods and services before paying. Hence it reduces asymmetric information between buyer and seller. Second, working capital may act as a precautionary cash reserve by guaranteeing against future cash shortages. Finally, from the point of view of accounts payable, it makes a company get important discounts for early payments. However, there are possible harmful effects of investing in working capital, which causes a negative impact on the company's performance at a certain level of working capital. First, the assumption of inventory maintenance costs, such as warehouse rental, insurance and security costs, which tends to reduce the level of inventory. Secondly, a higher level of working capital requires more capital that companies must finance, which includes financing costs and opportunity costs. On the other hand, companies that maintain a higher level of working capital face more credit risk in addition to higher interest costs. The positive and negative effects of working capital indicate that working capital decisions involve a trade-off. As a result, it is expected that companies have an optimal level of working capital that balances these costs and benefits to maximize the company's performance. Specifically, it is expected that the company's performance will increase with the increase of working capital up to a certain level, and on the other hand, outside this optimal point, the relationship between working capital and performance will be negative. On the other hand, higher working capital requires external financing, which imposes costs on the company, and on the other hand, access to foreign capital markets is limited for many companies, and it is expected that these factors have a significant impact. To have the optimal level of working capital of companies. Working capital is considered one of the important items of economic units and enterprises, which plays a significant role in financial decisions. The continuation of the activities of economic enterprises depends to a large extent on the management of its short-term resources, because the operational activities in a normal period, which is usually annual, are related to the recognition of working capital and its optimal management, so that the results of the expectation will be fulfilled and the possibility of continuing the activity in the long term will be provided. Maintaining an optimal level of cash to pay overdue debts, and using sudden opportunities for investment, which is a sign of the flexibility of the business unit, and access to raw materials for production, so that the company can respond to customer demand on time. It indicates the importance of working capital. Also, on the other hand, the access of companies to external financing and the way of financing to reach the required working capital is very important, because increasing the optimization of working capital requires financing. The results of this study are in line with the researches of Andari and Azmy [15], Roni et al.[29] and Syukur et al [34].

According to the results of the hypotheses of the study, the following suggestions are given:

- Companies should form a committee to investigate this issue and make economic decisions in order to meet the optimal amount of working capital and financing.
- Creating different systems and equipment in companies that can shorten or lengthen some business cycles and lead to an effect on working capital.
- The establishment of special planning to collect claims or pay accounts payable in companies can affect financing and business cycle to some extent.
- Establishment of an optimal working capital management system that manages receipts and payments and controls financial restrictions and prevents the company from going bankrupt.

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