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The joint impact of working capital and platform-economy on firm profitability: The case of e-business model in transition country

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ABSTRACT

This study examines the impact of traditional working capital management (WCM) and modern technological factors, specifically digital communications with customers as part of a customer relationship management strategy (CRM), on the performance of retail consumer-focused industrial and service firms in Russia. Panel data regression analysis is used to determine the individual impact of each strategy on profitability and model the combined effect of the two strategies. The results are presented through a 3D visualization, which highlights the significant positive impact of WCM and CRM on firm profitability. The study concludes that an effective combination of the two strategies can lead to a significant increase in profitability for companies operating in the retail consumer industry in Russia.

1. Introduction

Profitability is one of the most important indicators for evaluating the performance of a company. The literature studies a variety of factors that affect a company's profitability, such as: sales growth (Lee, 2014; Yoo and Kim, 2015), leverage and company size (Ibhagui and Olokoyo, 2018), WCM (Abuzayed, 2012; Akbar et al., 2021), CRM (Guerola-Navarro et al., 2021), and others. At the same time, the results obtained by scholars vary significantly across countries, industries, and time period, especially as new factors emerge that are not yet well understood (Akbar et al., 2021; Shen et al., 2020). In this study, we consider companies that focus on retail sales of their products to the public. The goal of the study is to analyze the impact of the following two factors on profitability:

a) Management of the working capital of the enterprise (WCM), more precisely, the management of the investment part of the working capital. It is the traditional resource factor. There are number of studies dealing with this issue (like in: Awopetu et al., 2017; Laghari and Chengang, 2019; Anton and Nucu, 2021; Essel and Brobbey, J, 2021; Ahmad et al., 2022). However, we consider the case of large transition economy, keeping in mind that transition countries are much less studied. In view of WCM, this study develops a model of two-indicator impact on the company's profitability: asset structure and the turnover of current assets. b) The second is customer relationship management (CRM) which considers modern technologies, especially, CRM through the company's account in social networks. The study refers to a social network as the modern technological factor of platform economy. This is a young and relevant area of modern economic research (Alawiyah and Humairoh, 2017; Santouridis and Tsachtani, 2015; Hajli, 2014; Luo et al., 2013). Scholars argue that the internet communications of firms with customers are part of CRM and both/or directly and indirectly affect their profitability (Coltman et al., 2009; Shantharam et al., 2019; Bettiol et al., 2021; Stoica, 2022). Moreover, the Covid 19 pandemic has become an impetus for the transition to digital communications, not only in B2C, but also in B2B and C2S communications. B2B firms in particular are moving from "traditional" and "internal" sales to the "hybrid" remote communication model (Donchak et al., 2022; Bulantseva, 2022). Digital communication between customers (C2C) is also beginning to have a significant impact on a company's success in the marketplace (Shankar et al., 2022).

The novelty of this study lies in the e-business strategy which examines the combined impact of WCM and CRM with customers through social networks on the profitability of the company, as well as their combinations on the firm profitability. The study develops four models

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that analyze: 1. the influence of control variables 2. the impact of user activity (potential customers) in the account on the firm's profitability; 3. the impact of company activity in the account on profitability; and 4. the impact of a company's account marketing indicator (*engagement rate*) on profitability.

With this in mind, the study's research question is: *How does the combination of these two strategies (characterized by variables reflecting working capital management and digital customer communication management) affect firm profitability*? To the best of our knowledge, the literature does not provide a complete answer to it. Scholars analyze the impact of a wide range of development strategies and their corresponding internal and external factors on firm profitability (Hung et al., 2021; Spitsin et al., 2022). For example, Cash Conversion Cycle (CCC) theory, states that efficient working capital management (i.e., a short cash conversion cycle) increases a firm's liquidity and profitability (Richards and Laughlin, 1980; Corey et al., 2013). Empirical studies, however, come to different, often contradictory, conclusions that both confirm and refute this relationship (Oseifuah, 2016). Since we are concerned with retail-oriented firms, we assume that effective working capital management has a positive impact on firm profitability. In network theory and the concept of social capital, the value or benefits derived from the relationships a person maintains with others. A lack of connections between groups or individuals creates "holes" in the structure of the network (Greve and Salaff, 2003). Effective networking, on the other hand, has a positive impact on organisational profitability (Ben-Zvi et al., 2015). We believe that a company's digital communication can accelerate engagement, close gaps, and enhance network effects by reaching a larger audience. Marketing theory considers promotion or communications as one of the four components of marketing that contribute to the growth of sales and profitability of the company (Palmer, 2012; Wigand, 1997). The company's account in social networks can act as a means of communication and promotion (advertising) of goods, and in some cases - as one of the sales channels.

However, the influence of strategy combinations and their corresponding factors on firm profitability has not been sufficiently studied. The interaction of multiple strategies creates new opportunities for companies to manage their profitability (Anokhin et al., 2021; Feng et al., 2019; Kohlbacher and Gruenwald, 2011; Llach et al., 2013). The object of research considers enterprises in the large transformation economy of Russia. After the collapse of the Soviet Union, more than a dozen countries with economies in transition emerged. These countries had similar characteristics: a strong lag in the economy and technology (particularly in the IT sector) and inefficient management of enterprise resources. The study therefore questioning*: Have countries in transition managed to overcome these problems? Will we be able to detect a positive impact of traditional resource factors as well as modern technological factors on business profitability*? In response to these questions, the study finds that a company's activity in social media has a positive impact on a company's profitability. However, the marketing indicator of a firm's account has no influence on the profitability of the company. The reason lies in Russia's (and generally the transition countries') technological backwardness compared to the industrialized countries.

The article is organized as follows. The literature review section systematizes the results of studies on the impact of WCM and CRM strategies on firm profitability and formulates hypotheses. The methodology section describes the data, variables, and develops 4 regression models. The next section presents the results of the study: Regression models and diagrams illustrating the relationships between variables. The discussion section compares the results with the work of other researchers and identifies the theoretical novelty and practical implementation. The conclusion section formulates the results of the work, as well as the limitations of the study.

2. Literature review

Numerous studies examine the impact of working capital on firm profitability (Ahmad et al., 2022; Akbar et al., 2021), and some of them concern developing and transitional economies, where firms are less stable and more vulnerable to environmental impacts (Anton and Nucu, 2021; Essel and Brobbey, 2021; Farhan et al., 2021). Nevertheless, there is a broad consensus that scholars distinguish two components of working capital: 1) the investment component, which represents the current assets of the company. Its share in total assets and turnover determine the basis for working capital management and have significant impact on the profitability of the firm (Ahmad et al., 2022; Essel and Brobbey, 2021; Laghari and Chengang, 2019); 2) the financial component, which includes the management of short-term liabilities, measured by total current liabilities to total assets ratio (Farhan et al., 2021; Alrahamneh et al., 2020; Baños-Caballero et al., 2014). Accordingly, our study examines the impact of the investment part of working capital on the profitability, which we evaluate in two ways: asset structure and current asset efficiency. In this regard, researchers come to different, often contradictory, conclusions.

Most of these scholars examine asset structure (the ratio of current assets to total assets) and asset turnover as the main indicators that determine the quality of a company's WCM (like in: Ahmad et al., 2022; Arimbawa and Badera, 2018). Based on the results of the analysis of these indicators, the studies conclude that the turnover rate of current assets has a positive and significant impact on profitability. However, some works come to opposite conclusions: There is a significant negative relationship between all indicators of working capital and return on assets, as well as between working capital and accounting profitability (e.g., in: Sial and Chaudhry, 2012; Tufail et al., 2013; Arshad and Gondal, 2013). The study of Wang et al. (2020) identifies the company's life cycle as one of the possible reasons for the inconsistency of results between WCM and firm profitability, i.e., the relationship between WCM and performance varies according to the stage of the corporate life cycle. Yet, most empirical studies confirm the positive impact of the investment component of working capital on profitability (Muhammad et al., 2022; Arimbawa and Badera, 2018). In addition, this study analyzes companies that focus on sales and the retail market. Such companies usually emphasize a high proportion of current assets and their high turnover. Therefore, the study is based on the following hypotheses: *H.1. - the investment part of working capital has a positive and significant effect on profitability: H.1.1 - the structure of assets (share of current assets in total assets) positively and significantly affects the firm profitability; H.1.2 - turnover of current assets positively and significantly affects the firm profitability*.

CRM through the platforms (such as a company's social media account) is a young area of business studies (Bai et al., 2020; Alawiyah and Humairoh, 2017; Santouridis and Tsachtani, 2015; Hajli, 2014; Luo et al., 2013), as part of the platform economy. Social networks on the Internet have been appearing since the end of the 20th century. However, it is only later that companies begin to consider social networks as a means of CRM. In addition, modern technologies provide multiple opportunities for digital CRM: the company's website, mobile applications, the company's social media accounts, etc. However, social networks are not leaders (for example, not all firms maintain their accounts on social networks to attract customers). Nevertheless, the COVID − 19 pandemic has strongly driven the further development of digital communication with customers (Stoica, 2022; Bettiol et al., 2021), and its influence on the efficiency of the company will increase in the future. Scholars argue that companies' Internet communication with customers is part of CRM and has both a direct and indirect impact on company profitability (Coltman et al., 2009; Shantharam et al., 2019; Bettiol et al., 2021; Stoica, 2022).

However, this effect can vary positive, as in the works of Dolega et al. (2021), Shantharam et al. (2019), and Stoica (2022), negative, according to the paper Voss and Voss (2008), insignificant (Hendricks et al., 2006), or dependent on the type of CRM (Reinartz et al., 2004). Scholars argue that social platforms (SMP), such as Facebook, Twitter, (for Russia – Vkontakte), have become one of the most important

channels for disseminating information about companies and their products to consumers in recent years (Gandhi and Kar, 2022). They have become one of the CRM factors affecting the profitability of firms. In addition, research findings show that consumer engagement and response to the information provided by companies is important for companies, which is to be measured by the engagement rate indicator (Braojos-Gomez et al., 2015). Consumer engagement on social media includes activities ranging from passive consumption of content to active participation in discussions and interactions with other consumers (Heinonen, 2011; Braojos-Gomez et al., 2015).

We believe that CRM and digital communication enable companies to maintain or increase their sales and achieve high profitability under these conditions. This study considers the impact of a firm's social media account on profitability in three ways: The impact of the target audience's (potential customers') activity on the account on the company's profitability, 2. The impact of the company's activity on the account on profitability, and 3. The impact of the engagement rate on profitability. According to the previous, the study develops the following hypotheses: H.2. - *the activity in the social network account of the company has a positive and significant effect on profitability*: H.2.1 - *the activity of potential customers in the company's account has a positive and significant effect on profitability*; H.2.2 - *the activity of the company in the account has a positive and significant effect on profitability*; H.2.3 - *the engagement rate in the company's account has a positive and significant effect on profitability*.

The final questions are about how these two strategies together will affect firm profitability. As far as we know, the literature does not provide a complete answer to this question. Scholars analyze the impact of a wide range of development strategies and their corresponding internal and external factors on firm profitability (Hung et al., 2021; Spitsin et al., 2022). However, the influence of strategy combinations and their corresponding factors on firm profitability has not been sufficiently studied. The interaction of multiple strategies creates new opportunities for companies to manage their profitability (Feng et al., 2019; Anokhin et al., 2021). Successful combinations of strategies can significantly increase firm profitability (Kohlbacher and Gruenwald, 2011; Feng et al., 2019). Unsuccessful strategies, on the other hand, lead to a decline in firm efficiency (Anokhin et al., 2021). Therefore, identifying patterns that demonstrate the impact of strategy combinations on firm profitability (based on the analysis of empirical data) is an important step in the analysis of firm profitability. This study examines the combined impacts of WCM and CRM on firm's profitability and identifies opportunities to increase profitability through effective combinations of these strategies. Both strategies help maintain or increase a firm's sales, and we hypothesize that they will have an impact on the profitability of retail-focused firms. Since both strategies are important for sales growth, we assume a multiplier effect resulting from their joint implementation and test the following hypotheses: *H.3. - the joint effect of the investment share of working capital and activity in the company's social network account enhances the positive and significant effect on profitability: H.3.1 - working capital and company activity in the account enhance the positive and significant effect on profitability; H.3.2 - working capital and activity of potential customers in the company account enhance the positive and significant effect on profitability; H.3.3 - working capital and engagement rate of the company account enhance the positive and significant effect on profitability*. Summarizing the above, the conceptual model of our study and tested hypotheses are presented in Fig. 1.

3. Data and methods

3.1. Sample and variables

A sample consists of 130 industrial and service companies in Russia, that sell their products to the retail consumers (population of the country). The sample includes 5 industries: the food industry, IT sector, housing construction, telecommunications, automotive industry. The criteria for inclusion of a company in the sample are as follows:

1. Sales of products of more than 10 million rubles annually during the period 2016–2020 (the range of annual sales of the sample is from 16 million rubles. up to 316 billion rubles).

2. Firms have a website and an active account in social networks (in our case, in the social network VKONTAKTE) at the beginning of the study period.

3. The company focuses on the retail consumers.

The sample included companies from all industries and services that met these criteria. Companies with missing values of indicators or exhibiting major outliers were excluded from the study. Companies' financial indicators are sourced from the Spark Information Systems (SPARK, 2022). The indicators of the company's account in the VKONTAKTE social network were obtained using the Popsters analytics service (Popsters, 2022). VKONTAKTE is the largest social network in Russia, similar to Facebook. The network is also widely used in the countries of the former Soviet Union and includes over 150 million users. The research period is 2016–2020. The obtained sample of companies represents panel data and includes 520 observations (130 companies x 4 years). The sample size and observation period are limited. Companies that had to meet the above criteria submit annual reports reflected in SPARK, have an active website and an account in the social network VKONTAKTE. Only data for 5-year periods can be downloaded from SPARK, and at the time of the study there was no data for 2021. Accordingly, the time period for the regression models is 2016–2020.

Next, the study considers the company's ROA as a dependent variable that characterizes the company's efficiency. This approach to measuring firm profitability is widely used in the literature (Lovallo et al., 2020; Munjal et al., 2019; Vaicondam and Ramakrishnan, 2017). Return on equity is calculated as the ratio between the net profit and the assets of the company multiplied by 100%. In accordance with the purpose of the formulated hypotheses, the study examines the impact of the following independent variables on firm profitability. First, the strategy for managing the investment component of working capital is evaluated. Two variables are used here: 1. Asset structure is defined as the percentage of current assets in the total assets of the company multiplied by 100%. This indicator is the counterpart of the indicator share of fixed assets. Both indicators are widely used in studies (Anokhin et al., 2021; Chatterjee, 2012).2. Turnover of current assets (*Turnover*) reflects the efficiency of current assets management and is calculated as the ratio of sales and current assets multiplied by 100% (Liang et al., 2020; Arimbawa and Badera, 2018). Modeling the impact of these variables on a firm's profitability allows us to test hypotheses #1.1 and #1.2.

Second, the study evaluates the customer relationship management strategy based on the following indicators of the company's social media account (Chong et al., 2017; Bai et al., 2020): 1. *the activity of the target audience (potential clients) of the company* - is estimated through the number of reposts of the company's messages in the social network. We use the natural logarithm of this indicator, because it varies greatly between firms (according to the studies of Holland et al., 2020; and Plaza, 2011); 2. *activity of the firm in the account* - defined as the number of publications of the firm for each year of the study period. We use the natural logarithm of this indicator, since it varies greatly between firms (according to the studies of Holland et al., 2020; and Plaza, 2011); 3. *engagement rate* – is defined as the ratio of the number of audience actions (likes, comments, etc.) to the number of subscribers to the firm's account, multiplied by 100%. We recommend this indicator as one of the options for marketing evaluation of the effectiveness of a company's social network account. These indicators can be used to test hypotheses 2.1, 2.2 and 2.3 and determine in which cases the activity in social networks leads to an increase in the profitability of the firm. To test hypotheses

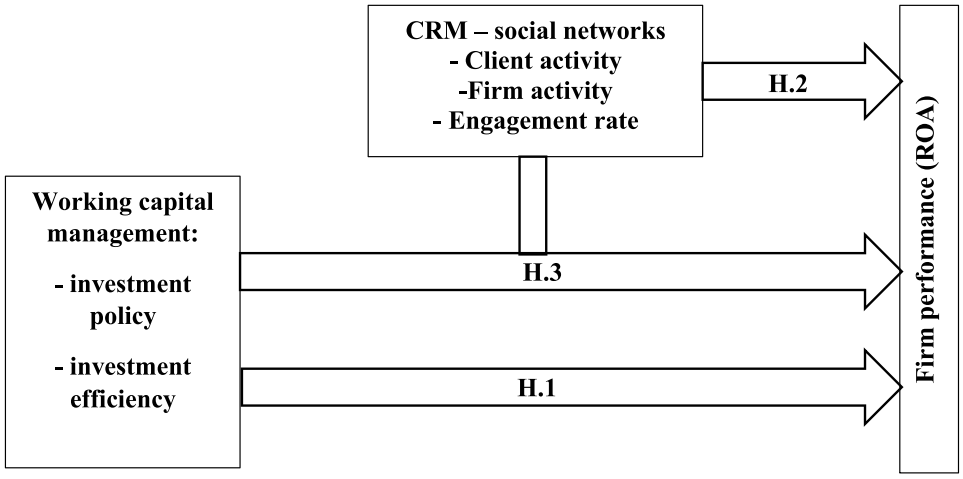

Fig. 1. Conceptual model of the study.

#3.1, 3.2, 3.3, we consider combinations (multiplications) of the above indicators for WCM and CRM strategies, as shown in Table 2.

Finally, our study develops several regression models for a wide range of control variables that may affect the dependent variable to control for alternative explanations. We include the following control variables in the model: a) *size of the enterprises* (*Size*), defined as the natural logarithm of revenue, adjusted for the inflation index (Ibhagui and Olokoyo, 2018; Munjal et al., 2019); b) *sales growth* (*Growth*) is measured as the ratio of difference in revenue between years *t* and (*t*-1) to revenue in year (*t*-1). This variable controls for a company's size and growth rates, which is critical given the panel nature of our data (Le and Phan, 2017); c) *current liquidity ratio* (*CACL*) is measured as the ratio of current assets to current liabilities and controls for company's ability to launch and sustain capital-intensive initiatives (Le and Phan, 2017; Anokhin et al., 2021); d) *leverage*, calculated as the share of borrowed funds in the assets of the company (Vithessonthi and Tongurai, 2015; Ibhagui and Olokoyo, 2018); e) *company's age* (*Age*) is measured as a number of years since company is established, according to SPARK database. This variable is considered as a control variable in many empirical studies (Vithessonthi and Tongurai, 2015; Spitsin et al., 2020); f) *Mean ROA* - is calculated as the average return on assets by industry and time period. Scholars often use dummy variables to account for differences in profitability across industries or time periods. Since our study considers many industries and years (5 industries and 4 years), we use this variable instead of dummy variables for each industry and year. Descriptive statistics and correlations between variables are presented in Table 1.

The data in Table 1 show that there is a strong correlation between the variables that characterize a company's digital communication with its customers through a social media account (customer activity, company activity). After discovering this problem, the study decides to include only one variable characterizing the company's digital communication with customers in each regression model. The study tests the effect of each of these variables (customer activity, company activity, engagement rate) on company profitability separately. In other cases, there is no strong correlation between the predictor variables ($r < < 0.70$), therefore, we can simultaneously use the remaining variables in regression analysis.

3.2. Models

The study applies panel data regression analysis. The regression model based on the least squares' method (pooled OLS model) is found to be inadequate. The panel nature of the data does not allow the use of a model based on the least squares' method. Several shortcomings are also noted for random and fixed effects regression models (Blackwell, 2005). The preferred method appears to be Prais–Winsten regression with panel standard error adjustment, which provides more conservative and reliable estimates (according to Beck and Katz, 1995). This method has been successfully applied in the existing literature dealing with similar research topics (Spitsin et al., 2020). Following Beck and Katz (1995), the panel regression model is expressed as:

$$Y_{i,t} = \beta \bullet X_{i,t} + \epsilon_{i,t}, \text{ for } \quad i = 1, \ldots, T \text{and} t = 1, \ldots, T \tag{1}$$

where $X_{i,t}$ is a K vector of exogenous variables and observations are indexed by.

both unit (i) and time (t). The OLS expression for the standard errors may be misleading for TSCS data. The correct expression is given by the square roots of the diagonal terms of:

$$Cov\beta = (X'X)^{-1} \bullet \{X'\Omega X\} \bullet (X'X)^{-1} \tag{2}$$

Replacing the study variables into the above expression and adding an *intercept*, the general model is expressed as:

$$ROA = intercept + \beta_1 \bullet Size_{i,t} + \beta_2 \bullet growth_{i,t} + \beta_3 \bullet CACL_{i,t} + \beta_4 \bullet leverage_{i,t} + \beta_5 \bullet age_{i,t} + \beta_6 \bullet meanROA_{i,t} + \epsilon_{i,t} \tag{3}$$

The study includes only control variables for model 1. Model 2 allows us to estimate the impact of a WCM on firm profitability and test hypotheses 1.1–1.2. Models 3.1–3.3 add separate variables reflecting digital communication with customers within the CRM (customer activity, firm activity, engagement rate) to test hypotheses 2.1–2.3. Models 4.1–4.3 examine the combined effect of both WCM and CRM strategies on firm profitability by combining (multiplying) the respective variables. Models 4.1–4.3 allow testing hypotheses 3.1–3.3. The models are shown in Table 2.

In addition, the study visualizes the obtained results. Using the developed regression models and the obtained visualizations, the study formulates recommendations for managers on how to increase the profitability of the company through WCM and CRM strategies. We also find out whether it is possible to achieve a multiplicative increase in profitability with a combination of these strategies. Finally, to minimize the problem of multicollinearity, all independent and controls variables in regression models are standardized according to Marquardt (1980). Calculations are performed using the *R* programming language.

Table 1
Descriptive statistics and correlations between variables.

N	Variables	Mean	Standard deviation	Correlations (r) and their significance (p)									
				1	2	3	4	5	6	7	8	9	10
1	Size	22.19	1.89	1.00									
2	Growth	0.09	0.30	-0.08$^{\lambda}$	1.00								
3	CACL	2.78	9.65	-0.10 *	0.05	1.00							
4	Leverage	56.21	27.60	0.14 * *	-0.02	-0.26 * **	1.00						
5	Age	18.33	6.33	0.33 * **	-0.11 * *	0.03	-0.08$^{\lambda}$	1.00					
6	Mean ROA	11.97	5.22	-0.04	0.03	0.06	-0.07	-0.08$^{\lambda}$	1.00				
7	Asset structure	80.29	19.43	-0.28 ***	0.09 *	0.09 *	0.07	-0.12 * *	0.16 ***	1.00			
8	Turnover	296.98	176.51	0.04	0.02	-0.12 * *	0.01	-0.10 *	0.18 ***	-0.19 ***	1.00		
9	Client activity	5.07	2.48	0.44 * **	-0.02	0.00	-0.02	0.13 * *	-0.18 ***	-0.22 ***	0.08$^{\lambda}$	1.00	
10	Firm activity	4.82	1.55	0.20 * **	-0.02	0.01	0.03	0.09$^{\lambda}$	-0.22 ***	-0.11 *	0.05	0.82 ***	1.00
11	Engagement rate	59.12	92.12	0.06	0.00	-0.04	0.01	0.12 * *	-0.15 ***	0.02	-0.05	0.30 ***	0.30 * **

Source: calculated by the authors. Note: *** p < 0001; * * p < 0,01; *p < 0,05; $^{\lambda}$ p < 0.10.

4. Empirical results

Regression modeling results are shown in Table 3. Model 1 includes only control variables. It is highly significant and explains 26.7% of the variation in the dependent variable. The effect of control variables on ROA in Model 1 is consistent with current academic evidence. We find a highly significant positive effect of firm growth on profitability, in line with the papers (Lee, 2014; Yoo and Kim, 2015; Federico and Capelleras, 2015), as well as a highly significant negative effect of leverage and firm age on profitability (in line with the expectations of Perking order theory and firm life cycle theory, as well as papers of Anokhin et al. (2021), Loderer and Waelchli (2010). Mean ROA, a variable that reflects differences in firm profitability across industries and time periods, also has a highly significant positive impact.

These results are in line with our expectations and show no differences in the impact of the factors on profitability between a country in transition and developed countries. We also find that the effect of the control variables on firm profitability described above remains almost the same in all models presented in the Model 3.3 column (Table 3). Model 2 adds two variables related to the management of the investment component of working capital. Both variables (asset structure and current asset turnover) have a highly significant positive effect on firm's profitability. The quality of model 2 improves significantly and explains 31% of the variation in the dependent variable. Consequently, firms operating in the retail market must increase the proportion of current assets in the asset structure, as well as to increase the turnover of current assets due to sales growth. Hypotheses No. 1.1 and 1.2 are confirmed.

In Models 3.1.–3.3, the indicators for a company's social media account are tested separately. The variables client activity (*repost*) and firm activity (*publications*) have strong significant positive effect on the firm's profitability (models 3.1 and 3.2). The explained variation of the dependent variable (R^2) also increases in these models. However, the *engagement rate* does not have a significant effect on the firm's efficiency and does not increase R^2 (Model 3.3.). Thus, the activity of customers and the firm in the social network increases the profitability of the firm. Hypotheses 3.1 and 3.2 are confirmed. In contrast, the marketing performance indicator of the social network account does not work and hypothesis 3.3. is rejected.

Models 4.1–4.3 examine the combined effects of WCM and CRM strategies on firm profitability. In models 4.1 and 4.2 this impact is highly significant positive. We see an improvement in the quality of these models (R^2 improves to 34.6% and 32.3%, respectively). At the same time, both WCM variables have a significant positive effect when interacting with the CRM variables client activity (*repost*) and firm activity (*publications*). Taking model 4.1. as an example, we perform a 3D visualization of the influence of the interacting variables. In the case of interaction between *asset structure* and client activity (*repost*), we assume that all other variables of model 4.1. take average values. Since all variables of model 4.1. standardized (except for the dependent variable), their means are zero. We get the following function for 3d visualization:

$$\text{ROA} = 12.52 + 2.80\bullet\text{asset structure} + 2.33\bullet\text{client activity} + 3.53 \bullet\text{asset structure}\bullet\text{client activity} \quad (4)$$

To get a complete picture of how the combinations of strategies studied affect profitability, a 3D visualization of this function is shown in Figure 2.

The study finds that a firm's profitability is highly dependent on the combinations of WCM and CRM strategies. To maximize profitability, the asset structure (high share of working capital in assets) and customer relationships (high customer activity in the firm's account) must be managed effectively. With this approach, the company can achieve a profitability of more than 20%. On the other hand, if a company pursues only one of the strategies and completely disregards the other, it

Table 2
Regression models and their variables.

Variables	Model 1	Model 2	Model 3.1	Model 3.2	Model 3.3	Model 4.1	Model 4.2	Model 4.3
Size	+	+	+	+	+	+	+	+
Growth	+	+	+	+	+	+	+	+
CACL	+	+	+	+	+	+	+	+
Leverage	+	+	+	+	+	+	+	+
Age	+	+	+	+	+	+	+	+
Mean ROA	+	+	+	+	+	+	+	+
Asset structure		+	+	+	+	+	+	+
Turnover		+	+	+	+	+	+	+
Client activity (Repost)			+			+		
Firm activity (Publications)				+			+	
Engagement rate					+			+
Asset structure * Client activity (Repost)						+		
Turnover * Client activity (Repost)						+		
Asset structure * Firm activity (Publications)							+	
Turnover * Firm activity (Publications)							+	
Asset structure * Engagement rate								+
Turnover * Engagement rate								+

Source: Authors development. Note: In all models, the ROA is dependent variable.

runs the risk of losing profitability. Similarly, we obtain a function and a graph to illustrate the combined impact of *turnover* and *client activity* on the firm's profitability (Figure 3):

$$\text{ROA} = 12.52 + 4.09\bullet\text{turnover} + 2.33\bullet\text{client activity} + 2.30\bullet\text{turnover} \bullet\text{client activity} \quad (5)$$

This case also confirms that a company's profitability is highly dependent on the combination of WCM and CRM strategies. To maximize profitability, effective management of current assets (high turnover of current assets) and customer relationships (high activity of clients in the company account) is required. Such an approach allows the company to achieve profitability above 20%. In contrast, if a firm pursues only one of the strategies and completely ignores the other, risks a decline in profitability (for example, in the case of high client activity with a low turnover of current assets).

The study develops similar diagrams and conclusions analyzing the joint influence of the WCM strategy and the company's activity in its social network account (Model 4.2.). An effective combination of WCM and CRM strategies (for the variables of customer activity and company activity) enables the company to achieve a multiplier effect for profitability growth. Hypotheses No. 4.1 and 4.2 are confirmed. In contrast, the *engagement rate* variable and its moderation with the *asset structure* and *turnover* variables in model 4.3 are not significant. Hypothesis 4.3 is rejected.

Finally, the study's database contains several indicators that characterize the activity of the target audience (*potential customers*) in the company's social network account. In the study, only one of them is analyzed (reposts - models 3.1 and 4.1). In this part, we will briefly consider other indicators that characterize the activity of the firm's clients: *likes*, *comments*, *views*. There is a high correlation between them, so we can include them in the model 3.1 and 4.1 separately, instead of reposts (Table 4). By analogy with reposts, we use the natural logarithms of these indicators.

Our calculations confirm the stability of the obtained results. Other indicators of the activity of the company's clients in social networks (*likes, comments, views*) have a highly significant positive effect on the profitability of the company. We also find similar multiplier effects of WCM and CRM on firm profitability in cases with these variables. Hypotheses 2.1 and 3.1 are confirmed for the variables *likes*, *comments*, and *views*.

5. Discussion

The study confirms the positive impact of the investment component of working capital on the profitability of firms, which is in line with the papers of Ahmad et al. (2022), Arimbawa and Badera (2018). At this point, we need to highlight an important characteristic of countries in transition. During the transition to market economies, these countries were characterized by inefficient management (Lin, 2005; Tan and Trung, 2019; Gabryelczyk et al., 2016; Kafouros and Aliyev, 2016). However, in the study, such a problem was not found, and it had a pronounced positive impact on profitability. We believe that this factor proved to be crucial in the case of companies focused on retail. These companies are private enterprises whose owners strive for high efficiency. Retailers are forced to pay close attention to the investment component of working capital and manage it effectively.

The next observation relates to how digital communication with customers via social networks affects a company's profitability. Digital communication with customers (via websites, social networks, etc.) is a trend in the evolution of e-commerce that has intensified in the context of the Covid19 pandemic. It helps to maintain or increase sales, identify customer needs, and develop products according to customer preference, thus increasing profitability (Stoica, 2022; Dolega et al., 2021; Shantharam et al., 2019). Still, digital communication requires firms to spend certain costs on creating and developing new communication channels, building an image in the digital environment, and attracting customers to websites and corporate accounts. At the same time, companies may sacrifice profitability by offering promotions and discounts to attract customers (Spitsina et al., 2022; Voss and Voss, 2008). In addition, the technological lag of countries whose economies are in transition to the developed world in terms of digitalization must be considered. However, the study shows that the activity of a company in social media has a positive impact on the profitability of the company. This is confirmed for two cases: 1) customer activity on the company's account in a social network and 2) company activity on its account in a social network.

However, the marketing indicator for a company's account (engagement rate) does not affect the company's profitability. We believe that the technological lag explains this fact. This indicator is the ratio between the activity of users and the number of followers of the account, and its high values are achieved with a small number of followers. This is the reason why it doesn't work. Firms with high

Table 3
Models' regression results.

Variables	Model 1	Model 2	Model 3.1	Model 3.2	Model 3.3	Model 4.1	Model 4.2	Model 4.3
Intercept	11.94 * ** (0.24)	11.95 ***(0.28)	11.95 ***(0.37)	11.95 ***(0.38)	11.95 ***(0.29)	12.52 ***(0.40)	12.15 ***(0.41)	11.91 ***(0.28)
Size	0.58(0.78)	1.00(0.91)	-0.01(0.84)	0.70(0.89)	1.00(0.93)	-0.08(0.84)	0.70(0.96)	0.97(0.90)
Growth	3.17 * ** (0.73)	3.09 ***(0.68)	3.10 ***(0.69)	3.11 ***(0.69)	3.07 ***(0.68)	3.02 ***(0.67)	3.08 ***(0.67)	3.11 ***(0.68)
CACL	2.25(2.29)	2.93(2.48)	2.82(2.38)	2.86(2.43)	2.84(2.46)	2.75(2.32)	2.56(2.38)	2.96(2.48)
Leverage	-7.84 * ** (0.85)	-7.85 ***(0.74)	-7.71 ***(0.78)	-7.85 ***(0.76)	-7.87 ***(0.75)	-7.04 ***(0.82)	-7.46 ***(0.82)	-7.85 ***(0.74)
Age	-2.33 * ** (0.61)	-1.85 ***(0.51)	-1.76 ***(0.48)	-1.86 ***(0.50)	-1.83 ***(0.52)	-1.62 **(0.50)	-1.71 **(0.53)	-1.83 ***(0.50)
Mean ROA	4.31 * ** (0.29)	3.45 ***(0.52)	3.75 ***(0.44)	3.72 ***(0.48)	3.45 ***(0.53)	4.44 ***(0.46)	4.08 ***(0.48)	3.47 ***(0.51)
Asset structure		2.53 ***(0.38)	2.69 ***(0.41)	2.57 ***(0.40)	2.54 ***(0.40)	2.80 ***(0.47)	2.58 ***(0.47)	2.55 ***(0.38)
Turnover		4.14 ***(0.97)	3.94 ***(0.94)	4.01 ***(0.96)	4.10 ***(0.97)	4.09 ***(0.97)	3.82 ***(1.04)	4.11 ***(0.96)
Client activity (Repost)			2.37 ***(0.59)			2.33 ***(0.63)		
Firm activity (Publications)				1.54 **(0.51)			1.02$^{\lambda}$(0.55)	
Engagement rate					-0.18(0.46)			-0.14(0.45)
Asset structure * Client activity (Repost)						3.53 ***(0.52)		
Turnover * Client activity (Repost)						2.30 ***(0.67)		
Asset structure * Firm activity (Publications)							2.46 ***(0.37)	0.29(0.43)
Turnover * Firm activity (Publications)							1.56 **(0.57)	-0.56(0.58)
Asset structure * Engagement rate								
Turnover * Engagement rate								
R^2	0.267	0.310	0.317	0.315	0.310	0.346	0.323	0.311
ΔR^2	-	0.043	0.007	0.005	0.000	0.029	0.008	0.001
Wald statistic	1053.26	1407.55	2265.46	2379.02	1706.09	4330.52	2871.13	1756.04
p	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Note: *** p < 0001; ** p < 0,01; * p < 0,05; $^{\lambda}$ p < 0.10. ROA is dependent variable. Standard errors are shown in parentheses. Based on the values and calculations from this table, the model 1 is expressed as: $\boldsymbol{ROA = 11.94 + 0.58 \cdot Size_{i,t} + 3.17 \cdot growth_{i,t} + 2.25 \cdot CACL_{i,t} - 7.84 \cdot leverage_{i,t} - 2.33 \cdot age_{i,t} + 4.31 \cdot mean\ \ ROA_{i,t} + \varepsilon_{i,t}}$. Expressions for models 2, 3, 4 are constructed similarly.

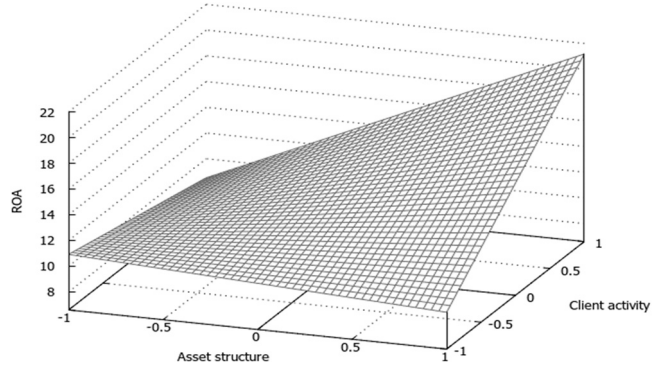

Fig. 2. The joint effect of Asset structure and Client activity on profitability in the model 4.1. *Note: This figure allows the study to explore the impact on profitability of all possible combinations of the WCM and the CRM strategies. The asset structure and client activity variables are standardized, the ROA variable is expressed as a percentage.*

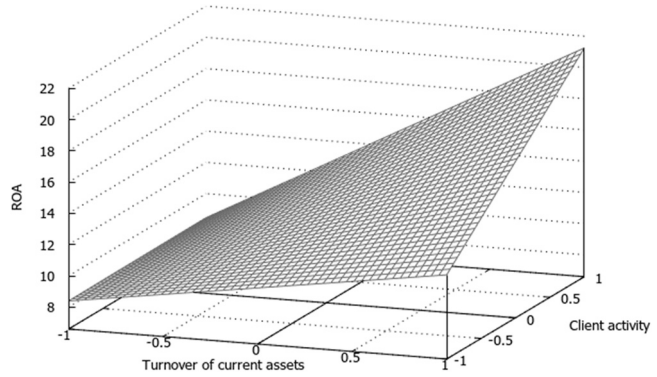

Fig. 3. The joint effect of current assets Turnover and Client activity on profitability in the model 4.1. *Note: This figure allows the study to explore the impact on profitability of all possible combinations of the WCM and the CRM strategies. The turnover and client activity variables are standardized, the ROA variable is expressed as a percentage.*

engagement rates often have few users in their accounts in transition countries. In this case, there is no impact on profitability.

The greatest significance of this study lies in the simulation of the combined effects of two strategies (WCM and CRM) on the profitability of the company. Successful combinations of strategies can significantly increase a firm profitability (Feng et al., 2019; Kohlbacher and Gruenwald, 2011). Unsuccessful combinations, on the other hand, lead to a decline in the firm's efficiency (Anokhin et al., 2021). In this study, we identify the effective combination of WCM and CRM strategies that will allow the company to significantly increase its profitability. We assume that these results were obtained as the companies focused on retail sales (B2C market segment) were tested. In the case of industrial enterprises (B2B market segment), the simulation results may be different. In summary, the results of modeling the impact of WCM and CRM on the profitability of retail-oriented firms are shown in Fig. 4.

The study results are in line with the CCC theory. Effective management of working capital leads to an increase in the profitability of the company, which is consistent with the provisions of the CCC theory. Moreover, we found positive effects from the interaction of WCM and CRM (digital communications). We believe that these positive effects can be explained in terms of transaction cost theory. Indeed, in order to reduce the cash conversion cycle, a firm usually makes concessions by offering discounts to customers, increasing advertising costs, and so on. Therefore, effective management of working capital and reduction of the cash conversion cycle can lead to some losses for the firm, which limit its growth in profitability. Effective CRM through digital communications avoids or reduces these losses. Digital communication with customers is less expensive and allows the firm to increase sales by attracting new customers rather than through discounts. As a result, a firm can achieve greater profitability by using an effective combination of WCM and CRM in a digital environment.

Finally, the study shows implications for management. The results of the applied models show that retail-oriented companies need to effectively manage their investment share of working capital and expand digital communication with customers via social media to increase their profitability. Firms should increase the working capital share of assets and working capital turnover and be active in social networks. Furthermore, effectively combining WCM and CRM strategies enables the company to significantly increase profitability. In contrast, if a company pursues only one of the strategies and ignores the other, it runs the risk of losing profitability instead of gaining it.

Table 4
Robustness tests.

Variables	Model 3.1 - Likes	Model 3.1 - Comments	Model 3.1 - Views	Model 4.1 - Likes	Model 4.1 - Comments	Model 4.1 - Views
Intercept	11.96 * ** (0.33)	11.97 * ** (0.21)	11.95 * ** (0.32)	12.44 ***(0.36)	12.76 ***(0.35)	12.30 ***(0.32)
Size	-0.22(0.90)	0.00(0.76)	0.07(0.92)	-0.28(0.87)	-0.33(0.88)	-0.05(0.80)
Growth	3.12 * ** (0.69)	3.23 * ** (0.69)	3.09 * ** (0.67)	3.03 ***(0.65)	3.17 ***(0.66)	3.19 ***(0.66)
CACL	2.79(2.38)	2.82(2.38)	2.68(2.38)	2.55(2.33)	2.36(2.26)	2.72(2.37)
Leverage	-7.73 * ** (0.76)	-7.56 * ** (0.78)	-7.81 * ** (0.79)	-7.17 ***(0.83)	-7.13 ***(0.90)	-7.37 ***(0.83)
Age	-1.76 * ** (0.48)	-1.66 * ** (0.50)	-1.64 * *(0.51)	-1.53 **(0.54)	-1.48 *(0.63)	-1.48 **(0.47)
Mean ROA	3.99 * ** (0.44)	3.77 * ** (0.42)	3.93 * ** (0.44)	4.56 ***(0.45)	4.43 ***(0.36)	4.40 ***(0.44)
Asset structure	2.65 * ** (0.42)	3.03 * ** (0.42)	2.69 * ** (0.42)	2.81 ***(0.52)	2.65 ***(0.59)	2.77 ***(0.46)
Turnover	3.89 * ** (0.93)	3.94 * ** (0.90)	3.91 * ** (0.94)	3.93 ***(0.99)	3.67 ***(0.92)	4.06 ***(0.98)
Client activity	2.71 * ** (0.65)	2.59 * ** (0.75)	2.24 * *(0.76)	2.41 ***(0.64)	2.74 ***(0.80)	2.03 **(0.73)
Asset structure * Client activity				3.02 ***(0.48)	3.21 ***(0.66)	2.31 ***(0.59)
Turnover * Client activity				2.01 **(0.64)	2.54 *(1.05)	2.11 **(0.66)
R^2	0.319	0.319	0.314	0.337	0.336	0.333
ΔR^2	-	-	-	0.018	0.017	0.019
Wald statistic	3030.20	3165.00	3444.60	5423.56	5720.78	5394.40
p	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Note: Authors calculation, *** p < 0001; ** p < 0,01; * p < 0,05; $^{\lambda}$ p < 0.10. ROA is dependent variable. Standard errors are shown in parentheses.

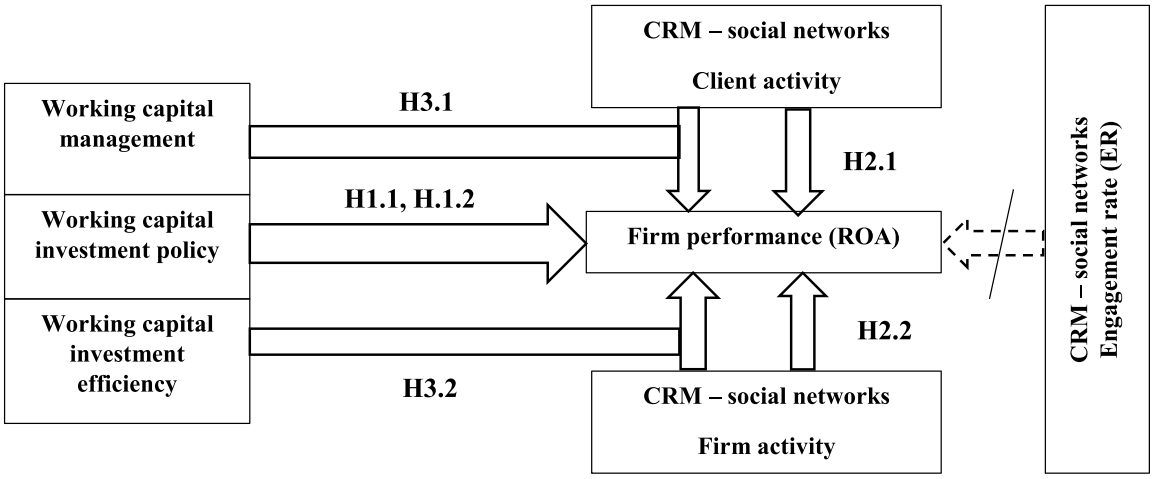

Fig. 4. Results of modeling the impact of WCM and CRM on the profitability of firms focused on the retail market.

6. Conclusions

In this study, four models are developed to identify the patterns of influence of WCM and digital communication with customers via social networks - CRM e-business - and their combinations on the firm profitability. The results confirm that companies in transition countries successfully use both traditional and modern technological factors to increase their profitability. The study finds that working capital investment management and digital communication with customers via the company social media accounts have a highly significant and positive impact on firm profitability. Moreover, the effective combination of WCM and CRM strategies enables the company to significantly increase profitability. In contrast, if a company pursues only one of the strategies and ignores the other, it runs the risk of losing profitability instead of gaining it.

The study also finds that the transition economy (Russia) continues to lag behind developed countries in terms of business digitalization. Many firms show low activity on the account, posting an average of one message per day. However, there are also active accounts of firms, where many messages are published and there is a high activity of customers. We believe that the technological delay explains the fact that the marketing indicator of a firm's account (*engagement rate*) does not affect the profitability of the company. This indicator is the ratio of user activity to the number of followers of the account, and its high values are achieved with a small number of followers. In the context of lagging behind in digital technologies, companies must first increase the absolute indicators: the number of subscribers, the activity of the target audience, and the activity of the firm itself. We assume that the transition to relative performance indicators of the corporate account should take place in the next phase when a sufficient target audience for the corporate account has been formed.

Finally, we can mention as a limitation of this study the period considered, which is 2016–2020 and includes only the year in which the pandemic started COVID − 19The study did not have access to data for subsequent years. We believe that e-commerce development was even stronger in the post-2020 period. A pressing issue for further research is also a detailed analysis in the context of retail-focused industries. The future studies may estimate a sectoral analysis by including a larger number of firms and expand the time period. In the case of this study, a sectoral analysis would lead to a significant reduction in the sample size, which would question the implication of regression modeling.

Data availability statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration of Competing Interest

The authors declare no conflict of interest.

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