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Contents

COMPETITOR ORIENTATION AND INNOVATION: KENYAN DEPOSIT TAKING SACCO EXPERIENCE

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Abstract: *The study sought to examine the influence of competitor orientation on innovation in Kenya's Deposit Taking SACCO's. The study adopted descriptive survey research design and targeted 49 respondents drawn from all the 7 Kenyan deposit taking SACCO's in western region. A census study was considered. Structured questionnaires and an interview schedule were used to collect data. Data was analyzed using descriptive and inferential statistics. The data was presented in a tabular form. Simple linear regression results indicated that competitor orientation accounted for 51.4% of variance in innovation (R^2 = .514) and was statistically significant (F=40.207 β=.554, t=6.341, p<0.01. The study recommends that Deposit Taking Sacco managers' should pay keen interest on their competitors so as to get information on their strategies, strengths and weaknesses as this may assist in bolstering innovation. The paper contributes to scholarly debate on the influence competitor orientation plays in enhancing innovation in Kenya's Deposit Taking Sacco's.*

Key Words: Competitor Orientation, Deposit Taking Saccos, Innovation

JEL classification: C12, L10, M10, M31.

1. Introduction

Organizational success depends largely on determining the target markets' preferences and delivering in a more effective and efficient way to the markets/consumers than competitors do. Competitor orientation refers to having an insight into the competitors' strengths and weaknesses (Naver and Slater, 2003). According to Ledwith and O'Dwyer (2009), organizations need to adjust to the market dynamics caused by competitors and also have an insight on the changing market needs. Competitor oriented firms focus on keeping pace or remaining ahead of competitors. Studies done in Pakistan as well as Indonesia have proven that competitor orientation impacts on product innovation (Salman, 2015; Jamilah, Sakti and Herman, 2020).
For companies, success in innovation means that the company is a step further than its competitors. An innovation can be in form of new product, new production technology or

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even a new strategy (Damanpour, Walker and Avellaneda, 2009). Avellaneda, 2009). Innovation impacts on SACCO performance (Ngure, 2017; Njenga, Kiragu and Opiyo, 2015). Vision 2030 in relation to financial services anticipates to create a financial sector that's vibrant as well as globally competitive that may result to job creation and also promote savings in order to finance overall investment needs in Kenya (GOK, 2013). The financial sector which includes SACCO's is critical as it can catapult economic development. According to Bwana and Mwakujonga, (2013) SACCOs have played the significant role of providing financial services to members. Co-operatives ensure there is inclusive growth in the society as they create opportunity for all (OECD, 2014). Some of the challenges experienced by SACCO's include inadequate resources, absence of IT skills, lack of IT equipments, outdated information technology, change resistance, unsupportive culture, poor communication and absence of a reward policy (Avigoke, Auma and Ng'ong'a, 2019).
Njenga, Kiragu and Opiyo (2015) portended that SACCOS served 81% of Kenyans who relied on the SACCO's resource mobilization. Co-operatives are marred with certain issues such as inadequate funds for innovation, competition from other SACCO's, microfinance institutions and banks (Micheni, Wamitu and Shavulimo 2017) poor governance (Odera, 2012), membership decline (Wasike 2012, Kiragu 2015). SACCO's need to develop strategies that enhance performance. SACCO's that lack clear strategies may find survival in the market difficult (Wanjiku, 2012). This paper explores how competitor orientation as a strategy may influence innovation. Empirical support exists for competitor orientation as an important driver of innovation across varying organizations and contexts such as in Pakistan (Salman, 2015), weaving products enterprises in Indonesia (Jamilah, Sakti and Herman, 2020) and SMEs in Nigeria (Mamman and Abuga, 2020). The current study therefore intends to fill gaps as evidenced in the extant literature by examining competitor orientation and innovation in Kenya's Deposit Taking SACCOs.

2. Literature Review

2.1. Theoretical Review

The study was anchored on Resource Advantage Theory of Competitive Advantage According to Hunt and Morgan (1995) having knowledge on competitors' products, prices and also strategies obtained from implementation of market orientation can result to a firm having a better market offering as compared to that of competitors. According to the theory, having a comparative advantage in resources can enhance competitive advantage of an organization (Hunt, 1995, 2012; Hunt and Morgan 1996). Hunt, (2011a) reiterates that according to the theory, innovation is critical in a firm's competing process. Innovation enables firms to have a competitive edge by increasing customer value thus attaining business success. Narver and Slater (1990) contended that market orientation related to firm's capability in responding to market changes and that it was important while seeking competitive advantage. Competitor orientation is an aspect of market orientation and as such when firms pro-actively competes with their rivals, then they are able embrace innovation. Moreover, organizations that are competitor oriented have a knowledge advantage over their counterparts, thus enabling them to achieve superior firm performance as they can adjust to different business environments.

2.2. Conceptual Review

Competitor Orientation

The behavior of competitors should be monitored and once detected then the organization should respond accordingly in order to win the competition (Jaworski and Kohli 2003). Frambach, Prabhu and Verhallen (2013) contend that competitor orientation aims at providing a strong intelligence foundation with regards to the current and future competitors for strategic action. Competitor orientation is the observation of competitors continuously and reacting through creation of products and services which are distinct from those of competitors (Reulink, 2012). According to Modding (2012) competitor orientation means that companies need to understand current and potential competitors' short-term strengths, shortcomings, long-term capabilities as well as strategies. Bendle and Vandenbosch (2014) asserted that managers having a competitor orientation anticipate to win others despite the expense of profitability. New product ideas normally come from the analysis of competitors' products and as such competitor knowledge enables New Product Development team to come up with informed decisions and develop products that surpass those of its competitors (Wong and Tong, 2012).

Innovation

Damanpour (1991) opined that innovation entailed a firm's ability to introduce equipments, system, laws, a new product or service, new technological production processes, a new structure or administrative systems or planning programs. Innovative organizations are able to improve individuals and firm's performance, to solve problems and also create competitive advantage (Trott, 2008). Innovation is essential for modern corporation's survival (Ko, To, Zhang, Ngai and Chan, 2011). Groups that are not innovative place their firms at risk (Habidin, Khaidir, Shazali, Ali and Jamaludin, 2015). Organizations can be more competitive only if they produce and design marketplace services as well as products that are superior to those supplied by their competitors (Karanja, Muathe and Thuo, 2014).

2.3 Empirical Review on Competitor Orientation and Innovation

Deshpande, Farley and Webster (1993) argued that it was not desirable to lay a lot of emphasis on competitors to the exclusion of customers as it would result to neglect of the customers. According to Ghorbani, Abdollahi and Mondanipour (2013) who conducted their study in Iraq's food manufacturers, found that competitor orientation positively influenced new product development success. This implied that for companies to meet market needs, they should monitor their competitors. Similarly Guleş *et al* (2015) established that competitor orientation positively influenced Innovation ability. Ozkaya *et.al.* (2015) found a direct link between competitive orientation and innovation. Moreover, the findings revealed that customer competence and competitor knowledge positively impacted on market innovation. Studies by Salman (2015) in Pakistan, Fatikha, Rahay and Sumiati (2021)in Indonesian SME's and Lagat, Chepkwony and Kotut (2012) in the Kenyan manufacturing sector on market orientation's impact on product innovation competitive advantage and firm performance confirmed that customer orientation, competitor orientation and also inter-functional coordination affected product innovation, competitive advantage and firm performance, respectively. Studies have also proven that competitor orientation impacts on customer value positively and significantly (Adi, Ujianto and Nugroh, 2018; Wulandari, 2012). Pupaningrum (2017) found that in embroidery SME's, market orientation which emphasized on competitor orientation and innovation significantly affected competitive advantage. A study done in weaving products enterprises in Indonesia by Jamilah, Sakti and Herman (2020) established that both Customer and Competitor Orientation significantly and positively impacted on Innovation Capability. Further New Product Development was found to significantly and positively impact on by competitor orientation and Innovation Capability. A Study on competitor orientation and innovation In Nigerian SMEs proved that competitor orientation impacted on the SMEs' innovation. The study employed cross sectional survey (Mamman and Abuga, 2020). The reviewed studies have been done in different contexts and in different sectors, mostly in SME's whose operations are not similar to those of SACCO's. Additionally some studies have focused on other dependent variables other than innovation. Hence this study on Kenya's SACCO's intended to fill the gaps. Thus the study hypothesis is as follows; Competitor Orientation does not significantly influence innovation in Kenya's Deposit Taking SACCOS.

3. Methodology

A research design is the structure of the research (Kombo and Tromp, 2006). Descriptive survey design was used as the study's main objective was to examine the influence of competitor orientation on innovation in Kenya's Deposit Taking SACCOs. Descriptive approach gives researchers an opportunity of using quantitative data to find common features about the population or phenomenon being studied (Zikmund, Babin, Carr and Griffin, 2010). The study focused on all 7 DTS's that were registered and operational in western region (SASRA, 2021). The respondents were 49 sections heads who included Finance, Accounting, Human Resource, Sales and Marketing, Customer service, Quality Assurance and Procurement. Census approach was used since it's appropriate where the study's population is below 200.

Primary data was collected using structured questionnaires and an interview schedule. Questionnaires were employed since they allow for respondents' anonymity (Cozby and Bates, 2012). Questionnaires were administered on 49 section heads while all the 7 CEOs were to be interviewed. The questionnaire had statements on competitor orientation and innovation which was developed by adapting previous studies' measures (Narver and Slater, 1990; Osuga, 2016; Rosli and Sidek, 2013). In regards to competitor orientation, the study focused on competitor information, actions, strengths and strategies whereas for innovation focus was on product, market and process innovation. As for the questionnaire, a 5-point Likert Scale was used for all items, where 1 = strongly disagree, 2 =Disagree: 3 =Fairly Agree: 4 = Agree and 5 = strongly agree. A Pilot study was done in a deposit taking SACCO in Kisumu County and cronbach alpha test was utilized to test for reliability. Validity tests were done (both Content and construct).

Data was analyzed using descriptive statistics (mean and standard deviation) and inferential statistics (Pearson's product moment correlation and simple regression analysis). The data was presented in tabular form. The regression model was as follows: -

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where;
Y = Dependent variable Innovation
B_0 = constant
X_1 = Competitor Orientation
β_1, = Model coefficient
ε = is the error term.

Further, content analysis was also used to analyze data collected from the interview schedule.

4. Results and Discussions

Response Rate

Out of the 49 questionnaires distributed, 40 were duly filled and returned thus representing 81.6% response rate which was regarded as being excellent (Baruch and Holtom, 2008).

Results on reliability, Means, standard deviations and correlation

Table 1 provides results regarding reliability, means, standard deviations and correlation The reliability was tested using cronbach alpha test. Descriptive statistics adopted in the study were means and standard deviation. In regards to correlation, an observation was made that the relation between competitor orientation and innovation did not exhibit multi-collinearity as the correlations did not exceed 0.8 as was suggested (Dwivedi, 2008).

Table 1: Results on reliability, Means, standard deviations and correlation of the study

Variable	Reliability	M	SD	CORRELATION	
				Competitor orientation	Innovation
Competitor orientation	0.945	**3.59**	**.982**	1 40	**.717**** .000 40
Innovation	0.936	**4.01**	**.759**	**.717**** .000 40	1 40

Note: M=mean SD=standard deviation, **. Correlation is significant at the 0.01 level (2-tailed).
Source: Field Data (2022)

The reliability results confirmed that the study variables had Cronbach alpha of 0.945 and 0.936 which are more than recommended 0.7 (Manerikar and Manerikar, 2015;Pallant, 2005).
The descriptive results in Table 1 indicated that most respondents were in agreement that their SACCO's practiced competitor orientation (mean of 3.59). As for innovation, most respondents agreed that their SACCO's engaged in innovation(mean of 4.01).
The findings above are in agreement with the responses made during the interview where the respondents agreed that the SACCO collected information regarding the competitors' strategies, strengths and weaknesses and that the competitors' information collected helped the organization to come up with new products and to gain competitive advantage over others. Additionally, the respondents mentioned that their SACCO's had embarked on innovative activities such as introduction of new products, implemented online transactions, introduction of mobile Apps, market penetration, diversification of membership through inclusion of members from other sectors. Further the respondents were of the opinion that the SACCO's should undertake the following measures to improve innovation. Firstly, the SACCO's can engage in continuous staff training and benchmarking. Further, the SACCO's should reward the most innovative employees so as to encourage them, it could document its policies and also enter partnerships with other organizations such as the county government for instance to pay salaries. Lastly the SACCO's should use its strategic plan to provide direction and also conduct quarterly business reviews.
To determine the relationship between competitor orientation and innovation a correlation analysis was conducted. The results indicated that the relationship was positive and significant (r = .717**). Similar findings were echoed by Mamman and Abuga (2020) who found a positive and significant correlation (r = .349**) in Nigerian SME's.

Regression Analysis Results

To establish the influence of competitor orientation on innovation linear regression analysis was utilized.

Table 2: Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	**.717[a]**	**.514**	**.501**	**.53617**

Source: Field Data (2022)

The results in table 2 above revealed a coefficient of determination (R^2) of 0.514. This illustrates that competitor orientation could explain the 51.4% of the variance in innovation in Kenya's deposit taking Sacco's.

Table 3: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	**11.559**	**1**	**11.559**	**40.207**	**.000[b]**
	Residual	**10.924**	**38**	**.287**		
	Total	**22.483**	**39**			
a. Dependent Variable: Innovation						
b. Predictors: (Constant), Competitor_Orientation						

Source: Field Data (2022)

The F test gave a value of (1, 38) =40.207, P<0.01, which supports the goodness of fit of the model in explaining the variation in the dependent variable .It also means that competitor orientation is a useful predictor of innovation.

Table 4: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	**2.027**	**.325**		**6.236**	**.000**
	Competitor Orientation	**.554**	**.087**	**.717**	**6.341**	**.000**
a. Dependent Variable: Innovation						

Source: Field Data (2022)

The regression equation to estimate innovation as a result of competitor orientation was stated as: Innovation= 2.027+0.554 + e
A unit increase in competitor orientation leads to 0.554 increase in innovation and it is statistically significant. The research hypothesis posted H_0: Competitor Orientation does not significantly influence innovation in Kenya's Deposit Taking SACCOS. From the results, the null hypothesis is rejected since competitor orientation has significant effect on innovation therefore depicting that DTS managers have knowledge of competitors' performance, strategies and strengths. The findings are consistent with those of Guleş *et al*. (2015), Ozkaya *et.al*. (2015) and Mamman and Abuga (2020) who established that competitor orientation influenced innovation though the studies were done in different contexts. On the contrary, Deshpande *et al.,* (1993), revealed that both customer orientation and competitor orientation are required in equal measure and focus should not just be on competitor orientation at the expense of customer orientation. Thus the challenges facing DTS such as unsupportive culture, poor communication, decline in membership, outdated information technology and competition from other firms can be overcome by adopting competitor orientation as a strategy so as to enhance innovation.

5. Conclusion

Competitor orientation has an influence on innovation thus if Deposit Taking SACCO's monitor competitors activities they can enhance their own innovation. The findings have been corroborated by reviewed studies which established that competitor orientation impacted on innovation (Lagat, Chepkwony and Kotut, 2012; Ghorbani, Abdollahi and Mondanipour, 2013; Jamilah, Sakti and Herman, 2020).The study contributes to the body of

knowledge by providing insights on the link between competitor orientation and innovation in SACCO's from a developing country context.
The study may be used as a reference point by future researchers. The study affirms the resource advantage theory of comparative advantage alluding that competitor oriented firms have a knowledge advantage over their counterparts, thus enabling them to achieve superior firm performance by being more innovative as they can adjust to different business environments. For practitioners, the implications of the above results are clear as an organization that wishes to enhance innovation in terms of product, market and process innovation should pay attention to its competitors.
The study recommends for Deposit Taking SACCO's to continuously monitor their competitors' actions in order to examine and understand why customers are attracted to their competitors, to gain insights on competitors' strategies including their strengths as well as weaknesses. Moreover Deposit Taking SACCO's should act on the collected information so as to improve on innovation.

6. Suggestion for further research

The study focused on Western Kenya's Deposit Taking SACCO's thus further studies could be extended to DTS's in other regions. A similar study could be done in other sectors such as SME's, Non-Deposit Taking SACCOs, banks and universities. More studies may be done on other innovation aspects such as organizational innovation. Further research can be done on the influence of other market orientation parameters such as customer orientation and inter-functional coordination on innovation as the study only focused on competitor orientation. Lastly further studies may incorporate moderating and/or mediating variables as the study focused on the direct link between competitor orientation and innovation.

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THE INFLUENCE OF ORGANIZATIONAL RESOURCES ON IMPLEMENTATION OF STRATEGIC PLANS IN TANZANIAN'S LOCAL GOVERNMENT AUTHORITIES

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Abstract: *The study investigated the influence of organizational resources on implementation of strategic plans (SPs) in Tanzania's Local Government Authorities. The idea behind was to establish the influence of available resources (financial, human, material and information) on implementation of SPs in LGAs. The underlying theory on this study was resource-based view. The study opted Pragmatism philosophy which hinges on the mixed methods approach (explanatory sequential design), and the study was a cross- sectional, where data were collected at one point in time. The sample size of 204 respondents was drawn from a target population of 860 employees in five randomly selected LGAs in Morogoro region. The findings revealed that, all predictors (financial, human, material and information resources) had a statistically significant positive relationship with the implementation of SPs in LGAs: Whereby, financial resources had (t=2.147, P=0.033<Alpha=0.05); human resources had (t=1.977, P=0.049<Alpha=0.05); material resources had (t=3.822, P=0.000<Alpha=0.05) and information resources had (t=4.783, P=0.000<Alpha=0.05). Also, the value of R2=0.335 indicated that, 33.5% of variation on the execution of SPs was influenced by all predictors in the model, thus other factors not included in the study model contributed 66.5% of implementation process in LGAs. The study recommends that, LGAs should allocate enough funds, quality employees, enough offices and facilities as well as improved ICT infrastructures for the successful implementation of their SPs.*

Keywords: organisational resources, strategic plans, Local Government Authorities, Pragmatisms, Mixed method design

JEL classification: C12, C18, M10, M19.

1. Introduction

This study aimed to investigate the influence of organizational resources on the implementation of strategic plans (SPs) in Local Government Authorities (LGAs) in Tanzania, this is in response to other studies which affirmed that, many LGAs in Tanzania have failed to implement their strategic plans are left in shelf for audit purposes only (Pallangyo & Rees, 2010). The study was guided by the resource-based view (RBV) of the firm, which suggests that a firm's resources and capabilities can provide a source of

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sustained competitive advantage, and can be classified as tangible or intangible, and as valuable, rare, inimitable, and non-substitutable (VRIN) (Grant, 1991; Holdford, 2018; Lee et al., 2020; Portillo-Tarragona et al., 2018). Strategic planning is a critical function of LGAs as it enables them to align their resources and capabilities with their long-term goals and objectives, and to achieve sustainable development (Grant, 1991). However, the implementation of SPs in LGAs is often hindered by various challenges, such as limited resources, lack of capacity, and lack of coordination (Dorsch et al., 2017; Lee et al., 2020; Portillo-Tarragona et al., 2018). Therefore, understanding the role of organizational resources in the implementation of SPs in LGAs is crucial was the key agenda of this study.

1.1. Theoretical Review

The Resource-Based View (RBV) of the firm serves as the primary theoretical framework used in this study. The Resource-Based View (RBV) theory, according to Barney (Grant, 1991), states that having unique and valuable resources and capabilities is a prerequisite for a firm's capacity to sustain a competitive advantage over time. The classification of resources is based on their intrinsic qualities (Lai et al., 2009; Yuen et al., 2019), which include tangibility, scarcity, uniqueness, and non-substitutability (VRIN). In order to thoroughly investigate and evaluate the effects of various organisational resources such as financial, human, material, and information resources on the effective implementation of strategic plans (SPs) within Tanzania's Local Government Authorities (LGAs), this study uses a theoretical framework. Researchers can assess how resources affect the successful implementation of Strategic Plans (SPs) using the Resource-Based View (RBV) framework, which highlights the important role organisational assets play in helping Local Government Authorities (LGAs) achieve sustainable development goals. The application of the Resource-Based View (RBV) paradigm facilitates the understanding of the complexities involved in the implementation of Strategic Planning (SP) in Local Government Authorities (LGAs) by emphasising the strategic importance of specific resource categories in coordinating capabilities with long-term objectives.

1.2. Empirical review

The majority of previous research has mostly concentrated on examining the effects of specific types of organisational resources on the effective execution of strategic plans (SPs) within Local Government Authorities (LGAs). Kusek and Rist (2004) conducted a study that emphasised the significant influence of financial resources on the effectiveness of strategic planning implementation in local government authorities (LGAs) in developing nations. Mabey and Salaman (2002) emphasised the existence of a favourable association between the accessibility of material resources and the effective implementation of strategic plans (SPs) in local government authorities (LGAs), with a specific focus on the United Kingdom. In an alternative setting, the research conducted by Ojo (2016) in Nigeria shown a favourable correlation between the accessibility of information resources and the implementation of Strategic Plans (SP) in Local Government Areas (LGAs). Although these studies have provided useful insights by examining individual organisational resources, their focus has predominantly been limited to a single-resource perspective. In light of the existing research limitations, the present study aims to address this gap by examining the relationship between various organisational resources, including financial, human, material, and information resources, and the implementation of strategic plans (SPs) within Local Government Authorities (LGAs) in Tanzania. The objective of this detailed analysis is to provide a more elaborate comprehension of the intricate dynamics that control the implementation of SP, so making a valuable contribution to the extensive knowledge base in this field.

2. Methodology

The study adopted pragmatism philosophy which employed both positivism and interpretivism paradigms. The study used mixed method approach, and the study employed explanatory sequential design as a type of mixed methods strategy. The study employed a cross- sectional design in terms of time horizon because data were collected at once. The sample size of the study was 204 respondents out of a targeted population of 860 employees in all five selected LGAs in Morogoro region. The data collection instruments used were questionnaires and an interview guide. The quantitative data were analyzed using descriptive and inferential statistical analyses with the support of software such as SPSS. The qualitative data collected through interviews were analyzed through content analysis. The study developed multiple linear regression model which was used:

Whereby,

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Y=dependent variable (implementation of strategic plans in LGAs), β_0 - Is constant which explain level of influence given$Y$-value when all the predictor values ($X1$, $X2$, $X3$, $X4$) are zero. β_1, β_2, β_3, β_4- Are constant regression coefficients representing the conditions of the independent variables to the dependent variable. $X1$ – Financial resources, $X2$ – Human resources, $X3$ – Material resources, $X4$–Information resources, ε -Extraneous variable (An error term describing other factors not involved in this model). This model will be analyzed by using SPSS 26 version in order to test the significance influence of independent variables ($X1$, $X2$, $X3$, $X4$) on the dependent variable Y – (Implementation of strategic plans in LGAs). To examine how individual variable or predictor influence dependent variable the t-test was used while F–test was used in order to test the goodness of the model, and the level of significance used by the study was α = 0.05.

3. Results

The data were gathered from five Local Government Authorities (LGAs) within the Morogoro region, specifically Gairo District Council (DC), Kilosa DC, Mvomero DC, Morogoro DC, and Morogoro Municipal Council (MC). The study had a sample size of 204 respondents out of a total of 860 employees who were targeted throughout all five Local Government Areas (LGAs). However, only 202 respondents returned the questionnaires, resulting in a response rate of 99.0%. Teddlie and Tashakkori (2009) argued that a response rate of 75% is deemed adequate as it yields the most accurate information. Therefore, the utilisation of a study response rate of 99.0% was deemed highly suitable in order to ensure the production of dependable and valid findings for the study.

3.1. Financial Resources and Implementation of Strategic Plans in LGAs

In respect to whether financial resources do influence the implementation of strategicplans in LGs, the findings revealed that, out of 202 respondents, the majority about (189) confirmed that, financial resources influence the implementation ofstrategic plans while (13) respondents did not see any influence. Also, some key informants such as the head of economics, planning and statistics from Gairo DC during the interview proclaimed that:

> *"Of course, a financial resource has great contributions on the execution of strategic plans in our council. In most cases shortage of fund in our district ruined the implementation some of strategies, this situation contributed by little budget as well as low revenues collection at our council"* (Interview, Head of economics, planning and statistics department, Gairo DC Headquarter; 25/04/2022).

Furthermore, with the use of a five-point Likert scale, the study examined on how financial resources influence the implementation of strategic plans in those fiveselected LGAs. Questions in Table 3.1 required respondents to choose the following: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree or 5= strongly agree.

Table 1: Financial Resources and Implementation of Strategic Plans

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	F	%	F	%	F	%	F	%	F	%
Does your institution have enough budget for execution its strategic plans	75	37.1	56	27.7	18	8.9	46	22.8	7	3.5
Does the central government provide enough subsidies to yourLGA	57	28.2	31	15.3	71	35.1	38	18.8	5	2.5
Does your LGA have sufficientalternative sources of income?	55	27.2	23	11.4	33	16.3	78	38.6	13	6.4
The central government allocate timely fund or subsidies at your LGA	67	33.2	25	12.4	38	18.8	52	25.7	20	9.9
Donors provides their financial support or fund timely at your LGA	51	25.2	43	21.3	50	24.8	44	21.8	14	6.9
The central government fund or subsidies which allocated at your LGA are well managed and utilized effectively	53	26.2	32	15.8	42	20.8	59	29.2	16	7.9
Does your LGA departments utilized effectively their allocated budgets or funds	24	11.9	30	14.9	57	28.2	83	41.1	8	4.0
Does the donors support at your LGA are properly managed andeffectively utilized	38	18.8	22	10.9	58	28.7	68	33.7	16	7.9

Source: Field Data, 2022 N=202

The general results in Table 3.1 reveled that, the majority of respondents agreed and strongly agreed that LGAs donors fund are utilized effectively on implementation of strategic plans in Tanzania's LGAs. On the other hand, the majority strongly disagreed and disagreed on whether institution have enough budget for execution of their strategic plans.

3.2. Human Resources and Implementation of Strategic Plans in LGAs

The question on whether human resources influence implementation of strategic plans in LGAs or not, the result revealed that, out of 202 respondents, the majority (188) confirmed that, humanresources while (14) respondents did not see any influence. Moreover, the finding wassupported with in-depth interview with one of respondent from Mvomero DC who argued that:

"In my opinion, human resource is the major tool for implementation of strategic plan in our district. Therefore, employees who have enough experience in our council enabled the successful implementation of many strategic plans, however, few man power in our council somehowimpose challenges of execution of strategic plans on time. Therefore, the government should employee enough man power in our council inorder to enhance the execution of strategic plans" (Interview, HR manager, Mvomero DC Headquarter; 22/04/2022)

Furthermore, with the use of a five-point Likert scale, examined on how human resources influence the implementation of strategic plans in those five selected LGAs.Questions in table 3.2 required respondents to choose the following:
1= strongly disagree, 2=disagree, 3=neutral, 4=agree or 5= strongly agree.

Table 2: Human Resources and Implementation of Strategic Plans in LGAs

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	F	%	F	%	F	%	F	%	F	%
Your institution offers on the job training programs frequently to itsemployees	34	16.8	45	22.3	16	7.9	76	37.6	31	15.3
Your LGA offers off the job training toits employees	34	16.8	29	14.4	29	14.4	69	34.2	41	20.3
Do you think employees at your LGA have willingness to attend both short- term and long-term training programs	23	11.4	18	8.9	19	9.4	81	40.1	61	30.2
Does the salary which offered by your LGA is sufficient to cover the currentlife expenses	40	19.8	33	16.3	36	17.8	47	23.3	46	22.8
Does your LGA provides overtime remuneration and other bonuses to its employees	33	16.3	25	12.4	34	16.8	83	41.1	27	13.4
Is there effectively flowing of communication between employeesand top management at your LGA	40	19.8	22	10.9	34	16.8	62	30.7	44	21.8
Does management at your LGA allowits employees to provide their opinionsor suggestions	26	12.9	20	9.9	52	25.7	70	34.7	34	16.8

Source: Field Data, 2022 N=202

Table 2 shows respondents' views on their LGAs' job and off-the-job training programs, willingness to attend training programs, salary sufficiency, overtime remunerations and bonuses, employee recognition, subordinates' involvement in decision-making, and communication effectiveness. In general terms the majority agreed and strongly agreed that both off the job and on the job training influence implementation of strategic plans in LGAs.

3.3 Material Resources and Implementation of Strategic Plans in LGAs

In respect to influence of material resources on the implementation of strategic plans in LGAs the findings revealed that, out of 202 respondents, the majority (184) affirmedthe influence of material resources while (16) respondents did not see any influence. The results were supported by one respondent from Morogoro DC during an in-depthinterview as follows:

> *"one of obstacle which hinders the execution of strategic plans in our council is shortage of material resources. For example, in my department we face difficult to reach our stakeholders (bee keepers) in order to provide education of bee keeping due to shortage of officevehicles…"* (Interview, Bee keeping Officer; 10/06/2022)

Furthermore, with the use of a five-point Likert scale, the study examined on how material resources influence the implementation of strategic plans in those fiveselected LGAs. Questions in table 3 required respondents to choose the following: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree or 5= strongly agree.

Table 3: Material Resources on Implementation of Strategic Plans in LGAs

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	F	%	F	%	F	%	F	%	F	%
Your LGA has enough buildings or offices for different organizational activities	67	33.2	57	28.2	12	5.9	45	22.3	21	10.4
The buildings at your LGA have quality and sufficient spaces for different organizational or office activities	47	23.3	31	15.3	61	30.2	52	25.7	11	5.4
Your LGA has enough and sufficient space (area) that can accommodate different activities	46	22.8	19	9.4	32	15.8	85	42.1	20	9.9
Your LGA has enough office furnituresuch as chairs and tables etc.	70	34.7	25	12.4	26	12.9	50	24.8	31	15.3
Your LGA has other office facilitiesout from furniture e.g. sheet papers	52	25.7	37	18.3	39	19.3	53	26.2	21	10.4
Are those vehicles or cars at your LGAfunctioning properly to accommodate various office duties	46	22.8	38	18.8	48	23.8	61	30.2	9	4.5
Does your LGA has a culture of repairing those destroyed or damaged vehicles or buying the new one	22	10.9	27	13.4	61	30.2	75	37.1	17	8.4

Source: Field Data, 2022 N=202

In a survey of 202 respondents, opinions were gathered on various aspects of office facilities in their LGAs. The majority of respondents disagreed and strongly disagreed on the influence of material resources on the implementation of strategic plans in Tanzania's LGAs.

3.4 Information Resources and Implementation of Strategic Plans in LGAs

The study's fourth objective examined whether information resources influenced the implementation of strategic plans in five LGAs in Morogoro region. A total of 202 respondents were asked if they thought information resources influenced the implementation of strategic plans in their LGAs, with 163 respondents confirming their influence and 39 respondents stating otherwise. Further findings concerning the influence of information resource on the execution of strategic plans in LGAs was collected from the narration of one respondent from Mvomero DC who proclaimed that:

> *"among of great challenge in public sector in Tanzania is problem associated with information resources. In my council, unreliable network affects different tasks to be performed. For example, different office activities have been not performed properly due to poor signal of networking activities. As you know many activities in our council had transformed into digital format, therefore, it's very difficult to perform any task without active networking system. Thus, execution ofvarious strategic plans in our council the information resources had great impacts"* (Interview, IT manager; 19/06/2022).

Furthermore, with the use of a five-point Likert scale, the study examined on how information resources influence the implementation of strategic plans in those five selected LGAs. Questions in table 4 required respondents to choose the following: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree or 5= strongly agree.

Table 4: Information Resources on Implementation of SP in LGAs

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	F	%	F	%	F	%	F	%	F	%
Your LGA has ICTexperts	64	31.7	45	22.3	10	5.0	64	31.7	19	9.4
ICT experts at your LGA are enough and sufficient to run different IT programs at your office	81	40.1	34	16.8	37	18.3	36	17.8	14	6.9
Your LGA have capacity building programs to its ICT experts	54	26.7	40	19.8	28	13.9	62	30.7	18	8.9
Your LGA has effective and reliable networking systems to create, process, and store electronic data	52	25.7	22	10.9	40	19.8	60	29.7	28	13.9
Your LGA has modern IT physical devices and infrastructure	48	23.8	38	18.8	47	23.3	57	28.2	12	5.9
Are those ICT facilities functioning properly	49	24.3	47	23.3	34	16.8	58	28.7	14	6.9
Your organization or LGA repairing the damaged ICT facilities or buying the new one	28	13.9	32	15.8	60	29.7	53	26.2	29	14.4

Source: Field Data, 2022 N=202

In Table 4 respondents in five LGAs shared their opinions on various aspects of IT expertise and facilities. The results showed that, the majority of respondents disagreed and strongly disagreed on the influence of information resources on the implementation of strategic plans in Tanzania's LGAs.

3.5. Implementation of Strategic Plans in LGAs

In this case, respondents from all five LGAs were given categorical question to answeryes or no to the main question which asked "Do you have awareness of the implementation of strategic plans at your LGAs?" Figure 4.10 indicates, out of 202 respondents, the majority of respondents about (146) confirmed that, they are aware of the implementation of strategic plans in their LGAs while (56) respondents are notaware of the implementation of strategic plans in their respectively LGAs. Further narration about the implementation of strategic plans was reported by one respondent from Morogoro DC who insisted the following:

> *"executions of strategic plans in our council are done with cooperationwith other departments such as financial department, economics, planning and statistics department. There is effective follow up in my department for various projects that we initiated to our farmers from the district level up to village level whereby we are working together with our agricultural experts from the wards up to villages…"* (Interview, Agricultural Officer, Morogoro DC Headquarter;13/05/2022).

Furthermore, with the use of a five-point Likert scale, the study examined on how strategic plans are implemented in those five selected LGAs. Questions in table 5 required respondents to choose the following:1= strongly disagree, 2=disagree, 3=neutral, 4=agree or 5= strongly agree.

Table 5: Implementation of Strategic Plans in LGAs

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	F	%	F	%	F	%	F	%	F	%
Your LGA frequently conducting monitoring and evaluation for its craftedstrategic plans	79	39.1	24	11.9	29	14.4	64	31.7	6	3.0
Your LGA provides feedbacks after conducting monitoring and evaluation	58	28.7	51	25.2	37	18.3	51	25.2	5	2.5
Your LGA has reliable and enough resources for execution its strategic plans	61	30.2	42	20.8	36	17.8	57	28.2	6	3.0
Are those resources appropriate or supportive to the particular crafted strategic plans	45	22.3	34	16.8	51	25.2	66	32.7	6	3.0
Is there proper management of the organizational resources	38	18.8	26	12.9	53	26.2	77	38.1	8	4.0
Your LGA strategic plans have successful implemented effectively	32	15.8	34	16.8	38	18.8	68	33.7	30	14.9

Source: Field Data, 2022 N=202

The general results in Table 5 reveled that, the majority of respondents agreed and strongly agreed that LGAs do successfully implement strategic plans in Tanzania's LGAs, while the majority strongly disagreed and disagreed with the frequency of monitoring and evaluation of LGAs' strategies.

3.6. Inferential Statistical Analysis

Inferential statistical analysis was applied in order to test the statistical significance of predictors such as: financial resources, human resources, material resources and information resources against the dependent variable which was implementation of strategic plans in LGAs. The results in Table 3.6 show the value of R of collective predictors on the implementation of strategic plans in LGAs is 0.579 at 0.05 level of significance. This implies that, there is a statistically strong positive correlation between all predictors (independent variables) and implementation of strategic plans.

Table 6: Model of Summary of Combined Effect

Model	R	RSquare	Adjusted R Square	Std. Error of the Estimate
1	.579[a]	.335	.322	.57078

a. Predictors: (Constant), Information Resources, Financial Resources, MaterialResources, Human Resources
Source: Own elaboration

The model $\boldsymbol{Y} = Q_0 + Q_1\boldsymbol{X}_1 + Q_2\boldsymbol{X}_2 + Q_3\boldsymbol{X}_3 + Q_4\boldsymbol{X}_4 + s$ is described by $R^2 = 0.335$ presented in Table 6 implies that, 33.5% of the variations on the implementation of strategic plans are influenced by all predictors (financial resources, human resources, material resources, and information resources). Thus, other factors which are not included in this study contribute about 66.5% on the implementation of strategic plansin LGAs.

Table 7: Coefficientsa of Collective Variables
Coefficients[a]

UnstandardizedCoefficients				Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	.848	.218		3.884	.000
	Financial Resources	.127	.059	.131	2.147	.033
	Human Resources	.091	.046	.129	1.977	.049
	Material Resources	.208	.054	.236	3.822	.000
	Information Resources	.248	.052	.329	4.783	.000

a. Dependent Variable: Implementation of Strategic Plans in LGAs
Source: Own elaboration

$ISP=0.848+0.127X1+0.091X2+0.208X3+0.248X4+ \varepsilon$

In the study's fitted model, ISP (implementation of strategic plans) was predicted usingX1 (Financial resources), X2 (Human resources), X3 (Material resources), and X4 (Information resources), while ε represents unaccounted variables affecting ISP. The constant value (B=0.848) indicates the positive rate of ISP when all predictors are zero.Increasing positive financial, human, material, or information resources alongside other factors boosts ISP at rates of 0.127, 0.091, 0.208, and 0.248, respectively.

4. Discussion

The study was conducted on five selected LGAs in Morogoro region, which includeda total of all departments in each LGA.

4.1 Financial Resources on Implementation of SP

The research findings indicate a notable obstacle in the execution of strategic plans within Local Government Authorities (LGAs) in the Morogoro region. A majority of the participants expressed strong disagreement regarding the sufficiency of budgetary allocations for the implementation of strategic plans, highlighting a prevalent lack of financial resources. This statement is consistent with previous research that highlights the importance of having adequate financial resources to effectively implement strategic goals (Alzghaibi et al., 2022; Pallangyo & Rees, 2010). This opinion is also supported by studies undertaken in Kenya and Tanzania, specifically within public sector organisations (Ndegwah, 2016). These studies propose the adoption of efficient financial control and allocation strategies in order to overcome the financial management obstacles that impede the execution of strategic plans. The findings of Pallangyo & Rees (2010) align with the advice made by Ndegwah (2014) that educational institutions should develop resource allocation strategies and allot sufficient money to effectively implement strategic plans.
Additionally, the study conducted by Kiptoo (2020) on a specific set of Kenyan parastatals highlights the ongoing issue of inadequate financial resources in the execution of strategic plans, despite the presence of independent regulatory agencies. According to Shillingi (2018), there exists a robust and positive correlation between organisational resources, including financial resources, and the implementation of strategic plans within Tanzania's Executive Agencies. This finding supports the argument that the presence of adequate financial resources plays a significant role in determining the success of strategic plans, as evidenced by a correlation coefficient of 0.562. The study conducted by Kirui (2013) examines the influence of financial resources on the implementation of strategic plans within local government authorities in Migori Country. The findings of the study highlight the significant role of financial resources in facilitating strategic plan execution, hence underscoring the importance of implementing effective financial management measures. According to Olsen (2017), the sufficiency of financial resources is of utmost importance in ensuring the effective execution of strategic initiatives. Cumulatively, these discoveries enhance our comprehension of the intricate difficulties associated with financial resources in the realm of strategic planning, thereby enriching the discussion on the crucial significance of financial management policies and practices in effectively implementing strategic plans within public sector organizations (Ali, 2018; Alzghaibi et al., 2022; Burke, 2008).
Furthermore, the findings derived from the multiple linear regressions conducted in this research demonstrate a statistically significant correlation between the execution of strategic plans within Local Government Authorities (LGAs) and their financial resources ($t=2.147$, $P=0.033<\text{Alpha}=0.05$). The null hypothesis, which posits that there is no substantial influence of financial resources on the implementation of strategic plans in Local Government Authorities (LGAs), is rejected in favour of the alternative hypothesis. This rejection indicates that financial resources do exert a considerable influence on the implementation of strategic plans in LGAs. This is consistent with the research conducted by Nkosi (2015), which supports the notion that financial resources play a vital role in the successful implementation of strategic plans in local government authorities (LGAs). The work conducted by Nkosi, specifically in the Mpumalanga area of South Africa, brought attention to the considerable obstacle presented by insufficient financial resources in effectively executing strategic goals. Moreover, the present analysis aligns with the suggestions put forth by Alzghaibi et al., (2022), which underscore the crucial need of sufficient financial resources for the implementation of strategic initiatives. The accumulation of this collective information provides essential contributions to the current body of

knowledge, highlighting the crucial significance of financial resources in effectively executing strategic plans (Alzghaibi et al., 2022; Berry, 2007; Burke, 2008; Pallangyo & Rees, 2010). This applies not just to Local Government Areas (LGAs), but also within the wider scope of environmental conservation and biodiversity management.

4.2. Human Resources on Implementation of Strategic Plans

The second objective of the study focused on examining the influence of human resources on the execution of strategic plans in specific Local Government Authorities (LGAs) located in the Morogoro region. The findings of this study indicated that a majority of participants agreed on the considerable impact that human resources had on the implementation of strategic plans in their respective Local Government Areas (LGAs). The respondents generally expressed their support for the implementation of both on-the-job and off-the-job training initiatives, the presence of satisfactory salary frameworks, consistent regulations for employee compensation increments, and the active engagement of employees in decision-making procedures within their Local Government Areas (LGAs). In addition, the research conducted in the chosen LGAs of the Morogoro area has found a noteworthy association between human resources and the execution of strategic plans. This is supported by a statistically significant positive correlation (R=0.336, P=0.000) as determined by the Pearson correlation analysis. The results of the multiple linear regression analysis provided further support for the aforementioned findings, demonstrating a strong relationship between human resources and the implementation of strategic plans (t=1.977, P=0.049<0.05).

The aforementioned findings make a substantial contribution to the current body of knowledge by providing insight into the crucial role that human resources play in effectively executing strategic plans within the framework of Local Government Authorities (LGAs). The study is in line with prior scholarly research conducted by Messah and Mucai (2011), Shillingi (2018) and Mumbua and Mingaine (2015). These scholars have underscored the significance of strategic investments in recruitment strategies, training initiatives, and motivation schemes for qualified personnel in order to effectively execute strategic plans. Furthermore, the present research aligns with the findings presented by Mango (2014) as well as Pallangyo & Rees (2010), emphasising the crucial importance of sufficient staffing and appropriate mobilisation of human resources in the successful implementation of strategic initiatives within local government entities. The findings presented in this study provide valuable insights and empirical evidence that contribute to the ongoing discussion on the importance of human resources in improving strategic planning in local government authorities (LGAs). These findings offer practical implications for policymakers, practitioners, and scholars working in this sector.

4.3. Material Resources on Implementation of Strategic Plans

The third objective of this study was to examine the influence of material resources on the execution of strategic plans in Local Government Authorities (LGAs). This was achieved by utilising a combination of categorical and Likert scale questions. The research produced substantial results, indicating a statistically significant but weak positive relationship between material resources and the execution of strategic plans in Local Government Authorities (correlation coefficient R=0.384, p-value=0.000<α=0.05). This suggests that although the correlation is not strong, it is statistically significant. Furthermore, the study revealed a significant influence of material resources and the execution of strategic plans in LGAs which contradicts the null hypothesis, which suggested that material resources have no significant impact (t=3.822, P=0.000<Alpha=0.05).

The aforementioned discoveries provide a substantial contribution to the current corpus of knowledge in various respects. First and foremost, the authors present empirical evidence that demonstrates the significant impact of material resources on the effective implementation of strategic plans within LGAs. This observation is consistent with and provides support for the assertions put forth by prior scholars, such as Messah and Mucai (2018), Mango (2014), and Ndegwah (2014), who all underscored the critical significance of material resources in the execution of strategic plans within diverse settings. According to Mango (2014), the execution of strategic goals becomes tough in the absence of adequate material resources. Similarly, Shillingi (2018) emphasised the importance of material resources and cognitive capacity in achieving success. Furthermore, the study conducted by Messah and Mucai (2018) provided evidence of the substantial impact that material resources have on the implementation of strategic plans inside tertiary institutions in the government sector. Mango (2014) highlighted that the inadequate distribution of material resources is a prevalent factor contributing to failure, while Ndegwah (2014) emphasised the favourable influence of material resources on the implementation of strategic plans in public secondary schools. Through the process of corroborating previous findings, the present study strengthens the existing consensus regarding the crucial significance of material resources in effectively executing strategic plans within LGAs. This study provides a solid empirical basis for future research endeavours and offers valuable insights for making strategic decisions within the realm of local governance.

4.4. Information Resources on Implementation of SP in LGAs

This objective of the study aimed to determine the influence of information resources on the execution of strategic plans in LGAs in the Morogoro region. The study employed a five-point Likert scale to evaluate the sufficiency of IT professionals, capacity-building initiatives, and ICT infrastructure. The findings, obtained from a sample of 163 participants, overwhelmingly demonstrated consensus regarding the significance of information resources in the execution of strategic goals. By utilising statistical methods such as Pearson correlation and multivariate linear regression, the study demonstrated a noteworthy and favourable impact of information resources on the execution of strategic plans in LGAs. The Pearson correlation coefficient revealed a statistically significant, albeit weak, positive association ($R=0.498$, P-value$=0.000<\alpha=0.05$). This finding was further supported by the results of the multivariate linear regression analysis, which showed a significant link ($t=4.783$, $P=0.000<\alpha=0.05$). The aforementioned findings not only emphasise the significance of information resources in effectively implementing strategic plans within LGAs, but also offer concrete quantitative evidence of their influence. The observed positive association indicates that an increase in information resources is associated with a higher probability of successful implementation of strategic plans. The statistical findings presented herein enhance our comprehension of the significance of information resources in the implementation of organisational strategies.

Furthermore, these findings are consistent with the suggested guidelines for organisations to build tangible procedures for the allocation of resources, namely in the domain of information and communication technology (ICT), in order to improve the execution of strategic goals. The aforementioned statement highlights the pragmatic consequences of the research's discoveries, providing practical suggestions for policymakers and organisational executives who seek to enhance the effectiveness of strategic planning results. Moreover, this study contextualises its findings within the wider academic conversation by establishing connections with prior researchers such as Alexander (2015), Ndegwa (2016), Mkumbo, Kweka and Gwalema, (2019) and Shillingi (2018). In accordance with the present research, these scholars have underscored the crucial importance of efficient allocation of information resources and strong information and communication technology (ICT) infrastructure for the effective implementation of strategic objectives, particularly within public sector entities. The incorporation of previous research findings enhances the credibility of the present study's findings and adds to the collective body of knowledge in the respective sector (Peng & Littlejohn, 2015; Otiende, 2017). In general, this study offers a significant empirical contribution to the comprehension of the connection between information resources and the execution of strategic plans in LGAs. It also has practical implications for both academic researchers and professionals working in organisations.

5. Conclusions

The study revealed that financial resources, human resources, material resources, and information resources have a statistically significant influence on the implementationof strategic plans in LGAs. All five LGAs studied (Gairo DC, Kilosa DC, Mvomero DC, Morogoro DC, and Morogoro MC) allocate insufficient budget to their departments for executing strategic plans, and the central government provides insufficient subsidies to LGAs. However, budget allocation is timely, and funds are utilized effectively by all councils from internal sources, central government, and donor support. Also, adequate human resources in all five LGAs have training and development programs, pay and incentive policies, and staff involvement in decision making. Material resources are sufficient in some areas, but all five LGAs face problems suchas inadequate buildings and office facilities. Information resources are generally adequate, with modern ICT facilities, capacity building programs, and reliable networking systems, but there is a shortage of IT experts, and poor networking systemsignal is a major constraint. Overall, the study highlights the importance of adequate resource allocation for successful implementation of strategic plans in LGAs.

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DIGITAL TRANSFORMATION AND DIGITAL CULTURE

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Abstract: *The paper marks the strong link between digital transformation and digital culture and how success is the result of two mutually conditioning variables. Digital transformation is a vast and complex phenomenon with multiple implications operating on two levels: microeconomic and macroeconomic. As a result, both internal and external organizational environments are changing profoundly. The digital transformation has two sides (it is both an autonomous strategy and the result of the digital one). This restructuring is taking place as a result of the new effects generated by this process: new business models, increased competitiveness in the business world, increased organizational efficiency and effectiveness, and culture plays an important role in this new landscape. Industry 4.0 is also a key determinant that has imposed a series of organizational changes and is linked to digital culture and digital transformation. The tools used were literature review and bibliometric analysis using VOSviewer for visualizing the main and secondary synapses between the variables. Through them, the hypothesis of interdependence between variables (digital transformation and digital culture) was validated. Digital transformation and digital organisational culture condition each other to ensure organizational success in an increasingly volatile, unstable, ambiguous, and digitally complex environment. The items that ensure the connection of the variables and the way in which new conceptual nodes are connected have been identified.*

Keywords: digital culture, organizational success, digitalization process, digital transformation, digital leadership, bibliometric mapping.

JEL classification : D23, M1, M15, O3, O33

1. Introduction

Culture is the epicenter of an organization. Firsova et al. (2021) and Cruz-Cardenas et al. (2022) argue that the key determinant of the success of the digital transformation approach is digital culture. Its importance is felt independently of industries and organizational sectors. It is through culture that the positive effects that digital technologies can bring to a business

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are maximized, generating business innovations to increase its endurance and adaptability. Due to a highly volatile, unstable, and dynamic, but especially digital, environment, organizations face both problems and opportunities.
The survival of the organization depends directly on digital transformation (Kő, Fehér and Szabó, 2019). Digital culture and digital transformation are inextricably linked in today's digital world and have a key role in guaranteeing corporate success (Runardotter et al., 2020) - hence the symbiosis between the two variables.
Digitally transformative initiatives come into play to cope with the new business environment, with the focus being on restructuring the organizational culture and making it digitally driven (a process that is not just about training employees in new digital technologies but also about updating the mindset across the organization).

2. Theoretical background

2.1. Digital organizational culture

According to several experts (Clark, 1972; Pettigrew, 1973; Trice, Belasco, and Alutto, 1969), the first research in the field of organizational culture appeared in the early 1970s, and in the 1980s, this concept became an integral part of management (Ouchi, 1981; Pascale and Athos, 1981; Deal and Kennedy, 1982). Digital organizational culture is the set of shared assumptions and overall understanding of organizational practices in a digital context (Velyako, V. and Musa, S., 2023). Lan noted (2021) that an organizational culture is a vital determinant in the digital transformation process, representing lessons for organizations and creating a solid foundation for a successful digital economic future. The need for cultural adaptability and flexibility is also marked by Knech and Hunt (2022) for digital transformation to have a chance of success. This is due to the dynamic and profoundly digital environment; it can be achieved by modernizing existing processes.
Therefore, digital culture is a means for organizations to plan digital strategies in a rapidly changing environment (Zhang et al., 2021).
Belle and Dyk (2019) mark as advantages of promoting and building a digital culture the following aspects: maximizing the degree of involvement and motivation of employees; increasing their ability to take risks; stimulating creativity; but also looking at mistakes as a learning base for improvement.

2.2. Digital transformation

Shalamanov et. al. (2020) highlight the complexity of digital transformation through an alignment of business operations, applied technologies, and digital skills across the organization at all levels. If the digital transformation process is well managed, positive effects (high levels of productivity, efficiency, and effectiveness, a considerable decrease in costs) are produced through sound organization of the approach (Толмачов, 2022). The strategies needed to support the digital transformation process are folded into this initiative by imposing a specific organizational structure (Verhoef et al., 2021). Sustainability over time in a digital business environment can be ensured due to digital transformation (Bochulia, 2021). Organizational culture is digitally revitalized through the digital transformation initiative; this is essentially a strategy (Gurbaxani and Dunkle, 2019).

2.3 Organizational success

Miles and Snow (1984) validate the importance of organizational success, which is essentially defined by obtaining a tight fit (consistency) between strategy, structure, and management practices. There is a strong connection between leadership and culture; the two variables are mutually dependent (Popa, 2012). Culture impacts an organization's

success more than significantly and, at the same time, has an effect on performance (Warrick, 2017).
Organizational success reported in a digital business environment depends on the ability to adapt and use technologies as efficiently and effectively as possible by integrating these technologies into the digital business strategy (Korchagina et al., 2020). According to Popovic et al. (2022) digital technology is much more than just the use or implementation of technologies, equally important is the mindset and culture, the need to change them to adopt the digitization process, and play a significant role in business operations, business processes.
A digital strategy has several key components (processes, systems, and human resources) to benefit from the most comprehensive and capable approach to integrating the digitalization process (Gerling et al., 2022).
In our view organizational success is influenced by the interaction between the digital strategy and the digital organizational culture of the organization, meaning that the strategic objectives of the digitalization strategy have been achieved.

3. Methodological approach

The topic under research can be known in depth through a literature review, leading to more effective data management (Senivongse, Bennet, and Mariano, 2017). In order to work with the very large dataset available, we turned to a program called VosViewer which allow to develop very complex bibliometric maps. Articles which entered the program were selected based on their relevance and key terms (digital transformation and digital culture).
The research questions are:

- Is there a positive link between digital transformation and digital culture in organizations?
- What are the items that link digital culture and digital transformation?
- What are the subsets of the two variables?

4. Discussions based on the results

Articles were selected from the Web of Science, and the full record was used as the method for extracting the data needed for the analysis.
The type of analysis was co-occurrence, the unit of analysis selected was all keywords and the counting method was full counting. The bibliometric analysis focused on extracting keywords from 749 relevant articles with a minimum number of occurrences of 5 (1844 words initially, but only 49 remained for viewing).
The items were grouped into 9 clusters. The first cluster consists of 9 items (artificial intelligence, big data, COVID-19, digital economy, digital technology, digital transformation strategy, enterprise digital transformation, strategy, and technology innovation).
The second cluster is composed of eight elements (barriers, business transformation, change management, digital innovation, digital transformation, innovation performance, sustainability, and technology).
Cluster number 3 consists of the same number of variables as the previous one (business strategy, digital business, digital leadership, digital strategy, digitalization, organizational change, performance, and SMES).
Cluster 4 presents the following 6 variables: business process management, digitization, disruptive innovation, dynamic capabilities, and industry 4.
Cluster 5 contains 5 determinants (digital maturity, digital technology, industry 4.0, leadership, and management).
Cluster 6 contains four determinants (digital culture, digital literacy, financial performance, and firm performance).

Cluster 7 also has four elements (innovation, knowledge management, organizational culture, and organizational success).
Cluster 8 has only 3 variables (corporate governance, environmental performance, and sustainability). The last cluster, cluster number 9, has only one element of innovation capacity.

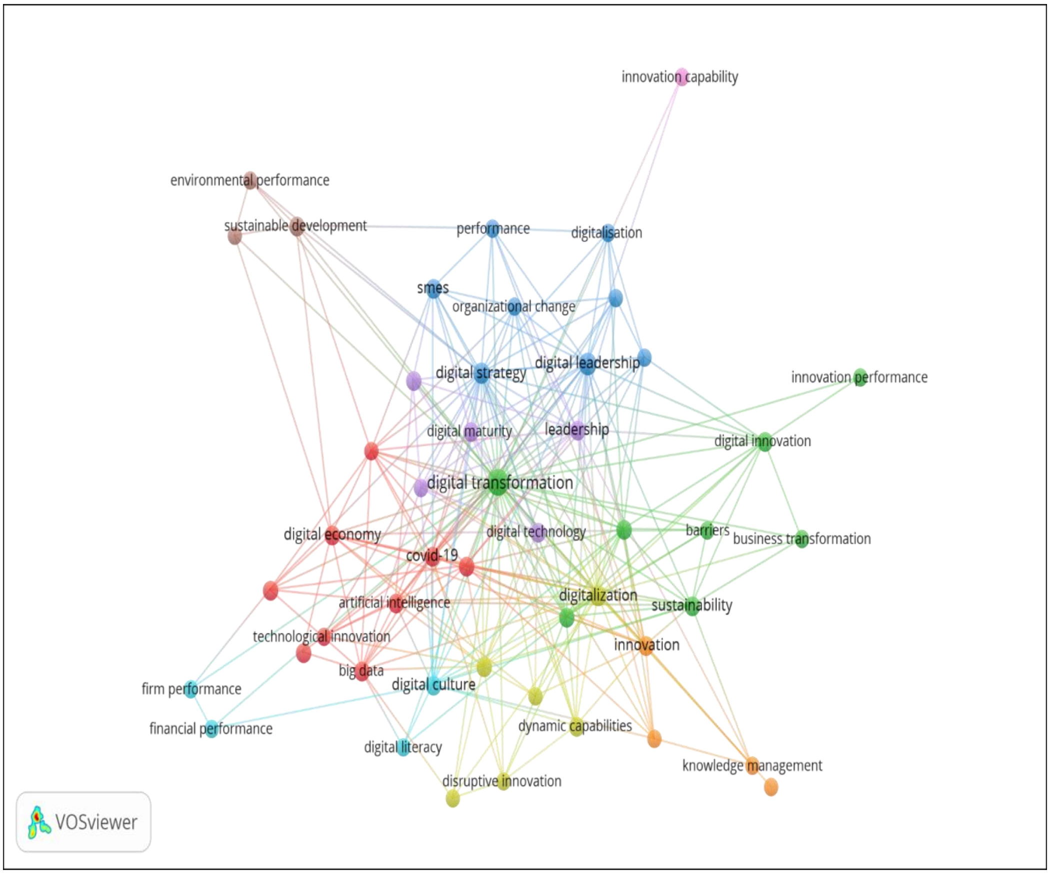

Figure 1. Bibliometric analysis of the link between digital culture and digital transformation
Source: Author's analysis/processing based on own data

According to the mapping, there is a direct interdependence between digital transformation and digital culture.
The relational nodes of digital culture are the following: digital strategy, digital leadership, digital literacy, financial performance, dynamic capabilities, digital transformation, sustainability, change management, digitalization, digitization, and digital technology.
The relational nodes of digital transformation are: digital leadership, digital culture, digital strategy, digital transformation strategy, organizational change, digital innovation, digital innovation performance, digital innovation performance, digital technologies, sustainable development, environmental performance, digital economy, organizational culture, firm performance, financial performance, technological innovation, Industry 4.0, digital maturity, innovation capability change management, digitization, business process management. The relational nodes of digitalization are the following: digital leadership, digital strategy, digital culture, leadership, organizational change, business strategy, digital economy, digital

technology, sustainability, innovation, dynamic capabilities, knowledge management, organizational culture, change management, business transformation, Industry 4.0.

The relational nodes of digital strategy are the following: environmental performance, performance, digitalization, business strategies, Industry 4.0, digital maturity, digital technology, digital leadership, digital innovation, digital transformation, digital transformation strategy, digital culture, innovation, change management, and technological innovation.

The relational node of organizational success is knowledge management. Through this node, it interconnects with organizational culture, leadership, digital transformation, sustainability, and digitalization. From organizational culture, a link is made to the digital culture variable, which extends to digital transformation and digital leadership.

Strategy can be seen as a clear laid-out roadmap that points in the right direction for an organization to follow and is fully aligned with the organization's purpose and objectives. The process of developing a digitally appropriate strategy is one of the most important organizational challenges in today's volatile, uncertain, complex, and ambiguous (VUCA) business environment. The clarity of a digital strategy can lead to an organization's digital transformation as well as generate performance (Turuk, 2020).

The way value is delivered to customers is different due to digital technologies, they have changed profoundly organizations, their operating processes and also the strategy addressed (Wiraeus and Creelman, 2018).

Khaw et al. (2022) place leaders (with highly developed digital skills) at the heart of the causes of successful digital transformation (through an applied digital strategy). Toomey (2013) marks the main tool of digital leaders (digital technologies).

Depending on the power of digital leadership to influence strategy, positive effects on organizational sustainability and competitive resilience will be observed over time. Riziki (2021) sees the style that facilitates positive effects and change based on motivating and inspiring teams and followers as transformational.

Digital transformation, according to Cennamo et al. (2020), plays a major role in an organization and involves strategic restructuring and rethinking of all organizational processes. Tang (2021) refers to digital transformation as being generated by digital technologies that develop new and innovative business models.

Alcácer and Cruz-Machado (2019) link digitization to Industry 4.0, the effect being transformative for organizations (their efficiency is increased). Reischauer (2018) sees this stage of industrialization as generating innovation. Beier et al. (2020) see Industry 4.0 as offering a digital transformation process by incorporating sustainable growth objectives into this approach.

Change management is a common determinant in the spheres analyzed. By cultivating positive perceptions of immersive management methods and digital technologies, transcendental thinking and digital awareness are essential for effective change management in organizations (Akperov et. al., 2022). Digital transformation could not happen without change management, which has the power to mobilize leadership and train the skills needed for organizational sustainability (Kohnke, 2016).

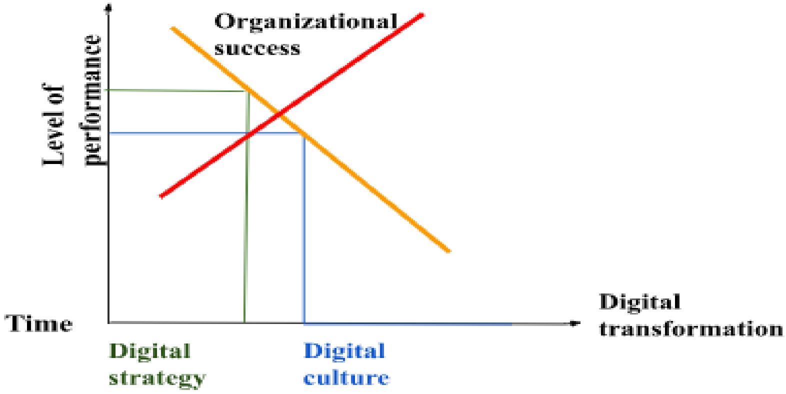

Figure 2. Relationships between variables in ensuring organizational success in the digital environment
Source: Author’s analysis/processing based on own data

Organizational success cannot be achieved without a high level of performance (this enables organizations to cope with the high levels of competitiveness in today's business environment). De Waal (2012) certifies the interdependence between organizational success and performance. Organizations enjoy higher performance and increased chances of success in their digital transformation efforts when digital culture and digital strategy strike a balance and converge.
According to Mitrea-Carpanu (2021), the high levels of performance achieved by organizations have in common several key positive elements (a leadership style characterized by strength, clarity of proposed objectives, and the ability to adapt and develop continuously their organizational culture). Furthermore, firms that value performance have efficient tracking systems, create goals and rewards for employees, and use high-performance procedures for work (Lenz, 1981).
The successful implementation of digital technologies and of digitalization approaches requires managers to undertake changes of the organizational culture, too, up to achieving a cultural transformation of the organization. Subsequently, digital organizational culture also generates and promotes the approach to new digital transformation initiatives (Trenerry et al., 2021), thus leading to the initiation of a virtuous circle for the organization.
The key transformative element is the interplay between the variables (digital culture and digital strategy) and how they condition and feed into each other. If the digital culture is well-shaped and strong, it will lead to a more effective process of implementing the digital strategy, increasing the organization's responsiveness to change and ability to introduce new technologies to support it. The strategy has the function of shaping the digital culture, which can be achieved by mapping a shared vision of the emerging digital transformation and its related strategic objectives, ensuring organizational success in the digital environment.
Digital technologies represent the common background of digital culture. These are more than necessary in both cases. Digital technologies in relation to digital transformation ensure greater optimization of the organization's activities, shaping the business and providing new opportunities for growth. Digital culture is a result of these technologies, which set new parameters for its functioning within the organization.
The environment that fosters change is provided by the relationship between digital culture and digital transformation (Serpa et al., 2022).

A successful approach (the digital transformation of an organization) requires a digital strategy. This marks the cause-effect relationship between the two variables: the effect is the digital transformation of an organization that it succeeds in achieving, and the cause is the effective development and implementation of the digital strategy. If we look in depth at the issue under research, we realize that digital transformation is not only an outcome; it has the capacity to produce major changes independently (if seen as a single and self-sustaining strategy) due to the broad spectrum of its approach and the proactivity it can enjoy, allowing it to increase its adaptability and development in relation to the digital and dynamic business landscape.

5. Conclusions

Digital culture and digital transformation go hand in hand, conditioning each other. Organizations can effectively implement their digital strategy and overcome the challenges of digital transformation by creating a digital culture that readily embraces change and encourages creativity.

Organizations can increase performance, promote innovation, and remain competitive by developing a digital organizational culture that values creativity, learning, agility, adaptability, and using digital transformation strategies, leading to overall organizational success.

It is impossible to overstate how important it is for companies to have a digital culture and digital strategy when it comes to digital transformation. Digitalization is not just about integrating new digital technologies into organizations - it is a strategic decision (it provides the necessary support in terms of competitive resilience and aims for success over a longer time horizon in the marketplace). Digitization can be seen as an innovative business strategy.

The 7 S model validates the synapses between digital leadership, digital culture, and digital strategy. The model focuses on the following variables: strategy, structure, systems, people, skills, style, and shared values. The first three belong to the category of hard organizational elements, and the last four belong to the category of soft organizational elements (Recklies, 2014).Culture is at the epicenter of this model. Each variable of the model interacts with the others and plays an important role in ensuring success.

In a digital corporate context, the interaction between digital organizational culture, digital strategy, digital leadership and the digital transformation process is critical for organizational success. Their harmonization represents the foundation to support and increase employee creativity, cooperation, and adaptation while embracing digital technology-driven changes in the business environment.

Organizations must have a digital strategy in place to successfully navigate and carry out their digital activities while aligning them with the broader company objectives and intentions. The thorough integration of digital technology and procedures across all elements of the company is what digital transformation entails. Setting the vision and direction for digital transformation, building a digital organizational culture of continuous learning and innovation, and enabling people to adopt and use effectively and efficiently digital tools and technologies all play important roles in successfully implementing a digital strategy.

This research paper provides clarifications of the key concepts subject to research: digital leadership, digital culture, digital transformation, but also of the way in which they are interconnected and lead to the achievement of organizational success in the digital environment. A strong correlation was identified between digital culture and digital transformation, with culture playing a key role in the transformation process because it is the one that dictates the way to lead the organization.

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Bio-note

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A COGNITIVE ANALYSIS OF CONSUMER LITERACY TRAINING AND FINANCIAL CAPABILITY IMPROVEMENT AMONG SOUTH AFRICANS: A CROSS-SECTIONAL STUDY

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Abstract: By using quantitative and descriptive research approach via a cognitive analysis, this article investigated the influence *of consumer literacy training as a tool to improve financial capability among South Africans. Data was gathered from 10300 consumer literacy trainees from Gauteng and Mpumalanga provinces of South Africa and purposively and conveniently sampled. The use of pre- and post-test questionnaire surveys, employing a Likert scale, was identified as crucial for gathering data on cognitive improvement. The collected data underwent analysis through descriptive statistics and regression analysis. To ensure the reliability of the results, robustness analysis was conducted using SPSS version 28 and STATA. Empirical findings from this research study have statistically demonstrated that consumers enhanced their knowledge and skills related to financial capability after receiving consumer financial capability training. This study contributes significantly to the existing literature by addressing a critical gap and substantially enhancing the knowledge of financial capability among the study's participants. These results carry potential implications for various stakeholders, including donors, consumers, policymakers, financial literacy educators, and finance practitioners, all of whom can play a pivotal role in promoting consumer financial education, particularly in the South African context. The study suggests that the theoretical models developed thus far have primarily focused on the driving forces behind consumer financial capability success. However, these findings also hold substantial promise for academia, policymakers, banks, and other key players in the field of consumer financial capability training, including short courses within South Africa. Furthermore, this study provides a solid foundation for future research aimed at enhancing consumer protection and shedding light on the various factors that may hinder low-income individuals from achieving their financial goals through financial institutions.*

Keywords: Consumer financial capability, consumer literacy and using credit card wisely.

JEL Classification: G50, G51, G52 and G53.

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1. Introduction

Consumer financial capability has been widely defined by Lučić et al. (2023), as people's knowledge, skills and behaviours specifically related to managing personal finances efficiently and effectively. Lučić et al. (2023) further state that consumer financial capability encompasses people's ability to make informed decisions, save and invest prudently, budget wisely, avoid excessive debt, protect themselves from financial scams and fraud, and it plays a vital role in determining an individual's financial well-being (Lučić et al., 2023, Birkenmaier et al., 2022, Xiao and Porto, 2022).

Consumer education has been recognized as a critical component in empowering consumers to make informed and rational decisions in the marketplace, both globally and in South Africa (Mvunabandi et al., 2023). Consumer education is the process of teaching individuals how to make informed decisions when purchasing goods or services, thus protecting their rights as consumers, and managing their finances (Khatri and Duggal, 2022); it continues to be an important both globally, and especially in South Africa (Kim and Xiao, 2021, Matchaba-Hove et al., 2019). However, there are still gaps and issues in the literature regarding consumer financial capability (Hawkins, 2009, She et al., 2023).

Globally, as per a 2020 study conducted by the Organisation for Economic Co-operation and Development (OECD), a mere 38% of adults across 26 countries expressed confidence in their capacity to grasp financial concepts and make informed decisions. Moreover, the COVID-19 pandemic significantly underscored the necessity for enhanced financial literacy and consumer education, particularly as consumers grappled with unparalleled economic challenges and risks (Baicu et al., 2020). The need for consumer education has increased as the complexity of the marketplace has grown and the incidence of consumer fraud and deception has become more prevalent (Stavins, 2017, Routh, 2022, O'Brien et al., 2022).

In South Africa, consumer education remains a critical issue for protecting and empowering consumers. According to Chitimira and Magau (2023), a total of 10,070 consumer complaints have been received in the 2020/21 financial year, with the majority of complaints being related to issues such as poor service delivery, poor quality of products, and unfair business practices. Additionally, a 2020 survey by the South African Savings Institute has found that only 14% of respondents had a good understanding of financial planning and investment. A survey conducted by Chitimira and Magau (2023) has found that over half of South African consumers struggle to manage their finances, with only 47% of respondents indicating that they have a budget in place. The same survey has found that only 45% of respondents were aware of their credit profile, highlighting the need for improved financial literacy among South African consumers.

The COVID-19 pandemic has also highlighted the need for effective consumer education in South Africa, as consumers face new risks and challenges related to online and digital commerce.

In South Africa, substantial gaps and challenges persist in the realm of consumer education, posing a potential increase in financial vulnerability and exploitation; these issues demand immediate attention and resolution (Rodríguez-Álvarez et al., 2019). This paper demonstrates the urgent need for consumer financial literacy training among South Africans in the Gauteng and Mpumalanga provinces which can improve their financial capabilities and empower them to make informed financial decisions. Therefore, this study has investigated the driving forces behind consumer financial capability success among South Africans in previously mentioned provinces.

The reminder of this research paper is structured as follows: The next section provides a review of relevant literature that formed the bedrock to this research study, the third section presents the study's research methodology, the fourth section provides the study's empirical results, analysis and discussions. The final section presents the study's contributions, conclusions and recommendations, limitations and suggestions for future research.

2. Literature Review

This study was driven by well-known theories that can be applied to consumer behaviour and financial capability form a diverse set of scientific grounds: financial, economic, psychological, sociological and etc. These include the permanent income theory, the life cycle hypothesis theory and life cycle knowledge accumulation model, the family management system. Furthermore, the researcher adopted the human ecological model, the human development model, the theory of trying, the capability approach theory, the self-efficacy theory, the motivation need theory, the model of goal directed behaviour, the behavioural life cycle hypothesis, the Mindspace theory, and the consumer education theory. All these theories offer insights on consumer behaviour, and financial capability and financial education among consumers. This mix of theories as theoretical toolbox and therefore, be described as multi-paradigm strategy aimed that gaining in depth insight into the research topic under investigation. Table 1 provides a snapshot or overview of analysed theories, models and theoretical frameworks and consumer financial capability in the centre of these theories.

Table 1: Theories

Theories	Descriptions/Explanations	References
Permanent income theory	This theory posits that people consume a fraction of permanent income in each period of life and thus the average of propensity to consume would equal to marginal propensity to consume.	Palley, 2010, Sabelhaus and Groen, 2000
Life Cycle hypothesis theory and life cycle knowledge accumulation model	This theory asserts individual consumes a constant percentage of their income during their life cycle and. Consumption and savings are stage-development	Seidl et al., 2021
Family management system	The theory posits that the family financial system is determined by the available resources that are then used to achieve financial goals in accordance with the identified needs and wants	Ecija, 2020
Human ecological model	This theory posits that interaction between the categories in microsystem (immediate family, friends' classmates, co-workers and member of one's spiritual community) and macrosystem could affect financial capability and literacy among young consumers susceptible to interactions influences	Reyes Uribe, 2023
Human development model	This theory asserts that individual development of desirable behaviours depend on family and parenting impact in childhood and parents are most significant socialisation agents in the context of children's money management and financial decision-making process	Khatri and Gupta, 2021
Theory of trying	This theory posits that the intention to try is determined by attitude and expectation toward success or failure, and attitude toward money management are determined	Ruben and Ruben, 2018

	by attitudes toward success, failure and learning of usage and affect the intention of behaving responsibly with personal finances	
Capability approach theory	This theory asserts consumers' advantage lies in their actual ability to achieve valuable functions for various aspects of life in a combination with quality of life and financial literacy presents valuable skill which contributes to financial capability therefore leading to the creation or can create financial well-being	Robeyns, 2021
Self-efficacy theory	This theory posits that consumer behaviour is determined by outcome expectancies and perceived self-efficacy, these authors further argue that consumer with high level of self-efficacy are confident about managing personal finances and have better money management performance	Shehzadi and Jameel, 2023
Motivation need theory	This theory posits that consumers are motivated and make decisions based on hierarchy of human needs through Maslow's hierarchy of human needs and note that consumer financial decisions can and should be ordered hierarchically.	Acquah et al., 2021, Rojas et al. 2023
Model of goal directed behaviour	This theory asserts that consumers behaviour is determined by positive and negative anticipated emotions, attitudes and subjective norms frequency and recency of past behaviour and desire, and by creating desire for financial knowledge and capacity one activates its intentions for responsible financial behaviour.	Arora et al., 2021
Behavioural life cycle hypothesis	This theory posits that consumer behaviour is determined by self-control, mental accounting abilities and mental framing, efficient spending habits in order to achieve financial well-being.	Bonekamp and van Soest, 2022
Mindspace theory	This theory asserts that consumers' behaviour is driven mostly automatically rather than deliberately. Consumers have to make an efficient decision while allocating incomes by account and making purchase decisions considering MINDSPACE theory, mental accounting and mental.	Lučić et al., 2023
Consumer education theory	believe that the main goal of consumer education theory is to provide individuals with the knowledge, skills, and attitudes they need to navigate the complex marketplace and make decisions that align with their needs and values.	Rodríguez-Álvarez et al., 2019

Source: Author’s compilation

2.1. Constructs and measures of financial literacy

Globally, Coderoni and Perito (2020) have proposed three main components and key constructs for measuring financial literacy: (1) knowledge of financial concepts (e.g., interest rates, inflation, risk diversification), (2) knowledge of financial products (e.g., stocks, bonds, mutual funds), (3) knowledge of financial management strategies (e.g., budgeting, saving, investing). Furthermore, Faulkner (2022) has identified the following four dimensions of financial literacy: (1) understanding financial information, (2) financial attitudes and behavior, (3) financial knowledge and skills, (4) financial experiences and outcomes. At the same time, Klapper and Lusardi (2020) have proposed a model of financial literacy in South Africa based on four constructs: (1) financial knowledge (e.g., understanding of financial products and concepts). (2) financial behavior (e.g., savings habits, budgeting), (3) financial confidence (e.g., ability to make informed financial decisions), (4) financial attitudes.

In South Africa, a study by Matlala et al. (2021) has aimed at creating a measurement tool for financial literacy that includes four constructs: knowledge, skills, behavior, and attitudes. The study found that the tool had good validity and reliability in measuring financial literacy among South African university students.

Another study by Nanziri and Leibbrandt (2018) in South Africa has used a similar measurement tool that included four constructs: financial knowledge, financial skills, financial attitudes, and behavior. Nanziri and Leibbrandt (2018) have found that financial literacy was positively associated with financial behavior, suggesting that improving financial literacy could lead to better financial decision-making. Similarly, Ifeanyi et al. (2019) have developed a financial literacy index for South Africa based on the following six constructs namely: (1) financial management, (2) investment literacy, (3) borrowing literacy, (4) insurance literacy, (5) knowledge of financial products and services, and (6) knowledge of financial institutions and their functions.

2.2. Empirical literature

A study by Boldar et al. (2022) has found that many Kenyans lack access to reliable information about consumer issues, including the usage of monetary products and services in financial institutions and information on their rights and responsibilities as consumers. This lack of information can make it difficult for persons to make informed decisions about the products and services they purchase. Similarly, according to Wentzel (2019), many young people in South Africa lack the knowledge and skills needed to manage their finances effectively, which lead to problems such as debt and financial instability. Wentzel (2019) alluded that lack of financial literacy tremendously impact youth's ability to make informed decisions about the financial products and services, as they do not fully understand the financial implications of their choices. In their research conducted in several European countries on consumer literacy, Seldal and Nyhus (2022) have shown that consumer education can play an important role in promoting financial inclusion and reducing financial vulnerability, particularly among disadvantaged groups. However, Seldal and Nyhus (2022) noted that there is a need for more tailored approaches to consumer education that consider cultural and linguistic differences.

A study by Mpofu (2023) has found that households with emergency funds had lower levels of financial stress and were better able to manage financial shocks compared to those without emergency funds. Mpofu (2023) has also found that budgeting and financial education were positively associated with emergency fund ownership. Another study conducted by the Chipunza and Fanta (2022) at the University of Johannesburg found that individuals who participate in financial education programs and receive guidance on how to use credit responsibly are more likely to demonstrate positive credit behaviors and experience improved financial outcomes. These findings are consistent with research conducted in other countries, which suggests that responsible credit use can lead to improved financial well-being (Umuhoza et al., 2020).

3. Research Methodology

This study was based on primary data via longitudinal data gathering at a large and anonymised non-government organisation based in South Africa of which signed the memorandum of understanding with the University of KwaZulu-Natal. Access to the raw organisational primary data which was captured into excel spreadsheet was granted on special condition of maintaining privacy and anonymity of 10300 participants who were selected randomly and participated in the pre and post survey. Hence, the need to strictly adhere to the UKZN Research Ethics, and procedures. The research also strictly adhered to the Protection of personal Information Act (POPI Act) in South Africa throughout. No pressure was placed on the participants to participate in the study and prospective participants were informed that their participation was voluntary. All participants signed consent forms to participate in the consumer literacy training and in pre and post-tests surveys prior to start. Credibility was established by providing detailed information to all participants on the purpose of the training, pre and post-tests surveys, what was expected from participants, why they were chosen and how the data would be protected and stored.
Upon signing of the memorandum of understanding between the anonymised non-government organisation based in South Africa with the University of KwaZulu-Natal on 23rd January 2023, the researcher was given access to the raw organisational primary data which was captured into excel spreadsheet. Data gathered was double captured in Excel spreadsheet for cleaning exercise so as to ensure that captured data error free. Subsequently data was converted and imported into SPSS version 28 and STATA for statistical analysis.
The research instrument used to gather data was developed by the organisational master trainer in consumer literacy and it was subdivided into two sections: Section A comprised demographic characteristics of the respondents, Section B involved a range of questions to capture their levels of knowledge on consumer literacy. The design the data collection instruments (questionnaires, consent and assent forms, training manuals were adhered to POPI Act). Pre-training surveys tests were conducted to capture initial consumer literacy knowledge (baseline). Each participant was deemed to have been trained from March (pre-test data) to November 2022 (post-test data) to succeed in making consumption informed decisions. Post-tests surveys were conducted in November 2022. The researcher carefully analysed the raw data pertain to pre-post-tests in order to measure consumer literacy and skills gained by each participant. The dataset for this research study, contains longitudinal dimensions from September (Pre-Test Data) to November 2022 (Post Tests Data) as 10300 participants across the two provinces, Gauteng and Mpumalanga. Pre-tests data of 5th and 6th Novermber 2022, Post data of 24th and 25th November 2022 and external evaluation done soon after workshop on one on one basis enabled the researcher to measure respondents' consumer literacy knowledge and skills.
Pre-and post-tests were to measure participants knowledge gained during consumer literacy training intervention. Pre-test was a set of questions given to participants before consumer literacy training began in order to test the initial knowledge on consumer literacy and to determine whether participants were knowledgeable or not and to determine their levels of consumer literacy. Upon completing consumer literacy training content, participants were given a post-test questionnaire to answer the same set of questions. The researcher compared the pre and post-tests survey results and scores to examine whether participants enhanced their consumer knowledge and skills. Robustness analysis was performed by using SPSS version 28 and STATA on all 6302 (61.2%) and 3998 (38.8%) participants form Gauteng and Mpumalanga provinces respectively. Data was also edited and checked for

logical internal consistency. The Cronbach's Alpha for the scales used for this study was .720, which suggest a high level of internal consistency. Therefore, the overall analysis suggest that the main drivers influence participants' consumer literacy. Gathered data were then put into binary variable in order to easily quantify frequency, mean and standard deviation scores into two categories. The first category "Poorly knowledgeable" and the second category "highly knowledgeable" on consumer literacy. Longitudinal quantitative data was analysed using descriptive statistics where percentages frequencies, means, and standard deviation scores and regression analysis.

4. Empirical results, analysis and discussions

The demographic data is presented in table 3 attached as appendix 1. The study's results show that 2228(21.6%) of the respondents were from Bushbuckridge municipality, 2004(19.5%) of the respondents were from City of Johannesburg, 410(4.0%) were from City of Tshwane, 98(1.0%) of the respondents were from Dr. J.S. Moroka, 2193(21.3%) of the respondents were from Ekhurhuleni Local Municipality, 163(1.6%) of the respondents were from Emakhazeni Local Municipality, while 566(5.5%) of the respondents were from Emfuleni Local Municipality. The study's results further show that 124(1.2%) of the respondents were from Midvaal Local Municipality, 538(5.2%) of the respondents were from Lesedi Local Municipality, 111(1.1%) of the respondents were from Sedibeng Local Municipality, 282(2.7%) of the respondents were from Emalahleni Local Municipality, 680(6.6%) of the respondents were from Nkomazi Local Municipality, 20(.2%) of the respondents were from Mbombela Local Municipality, 503(4.9%) of the respondents were from Mashishing Local Municipality, 235(2.3%) of the respondents were from Victor Khanyile Local Municipality, while 145(1.4%) of the respondents were from Thaba Chweu Local Municipality, and 235(2.3%) of the respondents were from West Rand Local Municipality. The study's results also indicate that 6302(61.2%) of the respondents were from Gauteng and 3998(38.8%) of the respondents were from Mpumalanga.
The study's results show that, 7003(68.0%) of the respondents are women and 3297(32.0%) men. Thus, there were more females than males. The study's results, also show that 5054 (49.1%) of the respondents were between the ages of 18 and 20, 2508 (24.3%) fell into the age group of 21 and 25, 783 (7.6%) of the respondents were Between the ages of 26 and 30, 523(5.1%) of the respondents between the ages of 31 and 35, 366(3.6%) of the respondents fell into the age group of 36 and 40, 288(2.4%) of the respondents between the ages of 41 and 45, 248(2.4%) fell into the age of 46 and 50 and 530(5.1%) of the respondents were 51 and above , and 4(7.5%) of the respondents were above 60 Years old. Thus, the majority of the respondents were between 36 and 48 years old. This finding contradicts the findings of many studies around the world that have found women to have the significantly lower financial knowledge and ability than men (Mashizha et al., 2019; Nanziri & Leibbrandt, 2018; Shusha, 2017; Widityani et al., 2020).

Table 2: Level of Consumer literacy and the use credit card wisely knowledge before and after Training.

Variables	**Pre-Training Survey Results (March 2022)**	**Post-Training Survey Results (November 2022)**
	Frequency	**Frequency**
Respondents with the score of 38%	947(9.2%)	0(0%)
Respondents with the score of 44%	855(8.3%)	0(0%)
Respondents with the score of 50%	1331(12.9%)	0(0%)
Respondents with the score of 56%	1709(16.6%)	87(0.8%)
Respondents with the score of 63%	1815(17.6%)	81(0.8%)

Respondents with the score of 69%	1617(15.7%)	178(1.7%)
Respondents with the score of 75%	1117(10.8%)	308(3.0%)
Respondents with the score of 81%	624(6.1%)	547(5.3%)
Respondents with the score of 88%	218(2.1%)	1176(11.4%)
Respondents with the score of 94%	48(.5%)	2627(25.5%)
Respondents with the score of 100%	19(.2%)	5296(51.4%)
TOTAL	**10300 (hundred percent)**	**10300 (hundred percent)**

Source: Compiled by the researcher via SPSS.

Table 2 above provides a snapshot of the descriptive and longitudinal analysis for a comparison between pre-test and post-tests surveys in all study's variables that were identified. Overall, the descriptive and longitudinal analysis conducted on whether consumer literacy training can enhance financial capability among south Africans found that number of participants poorly scored during pre-tests were significantly decreased comparing to those who were excellently scored during pre-tests were increased.
Based upon the results of descriptive and longitudinal analysis in the aforementioned table from the pre and post-tests survey, the researcher can therefore, draw a valid conclusion that there is statistically significant financial literacy knowledge improvement after the completion of consumer literacy training since the variance between pre and post-tests scores variance were positive from 19(.2%) to 5296(51.4%) who scored 100%. The results from pre-tests scores showed that majority of respondents were financially illiterate as a small portion scored highly 100% which is19(.2%). But the results from post training survey indicate that majority of the respondents were not highly financially literate. While post training scores potentially indicate that majority of respondents scored highly 5296(51.4%). These trends have been observed throughout from those who scored 38% to those who scored 100% and these variants proved that respondents greatly improved their consumer behaviour, and financial literacy and financial capability.
The means, standards deviations, and p-values for the 38 variables are presented *in table 4 attached as appendix 2.* Table 4 further indicates that p-value of <.001******* was statistically significant throughout which has the interpretation of good financial literacy and respondent's knowledge improvement after being trained. Hence, the statistical significance between dependent and independence variables was found. This result is in line with the prior literature that states that low level of financial literacy is associated with negative credit behaviours, poor mortgage choice, mortgage delinquency and home foreclosure and debt accumulation on high cost borrowings (Baulkaran, 2022, Fitri et al., 2022, Xiao and Porto, 2022).
The results from post training (post-tests) indicate that the participants who were not financially knowledgeable during pre-training significantly decreased. Based upon this result, it can be inferred that consumer literacy training enhanced the knowledge of participants robustly.
These results support the findings of other studies that found that found that personal financial education is crucial in reducing personal bankruptcy as well consumer credit delinquency rates (Gupta and Prusty, 2023, Baulkaran, 2022).
However, our study's findings significantly differ from those of Cheryl and Ng (2022) who's study on protecting the unprotected consumer data in the internet of things (IoT) concluded that majority of consumers expressed concern about their personal data risks due to the IoT usage. This finding is also overwhelmingly supported in the literature (Xiao and Bialowolski, 2023, Xiao, 2016, Xiao et al., 2015, Xiao et al., 2014).
These findings are consistent with earlier research on consumer education theory by Rodríguez-Álvarez et al (2019) and Khatri and Duggal (2022) which emphasized the

importance of providing individuals with the knowledge and skills necessary to navigate the marketplace and make informed choices. Bin Mohd Alwi et al. (2022) has argued that consumers have a right to accurate and complete information regarding banking products and services, as well as the right to voice their opinions and hold businesses accountable for their actions. Similarly, Khan et al. (2022) has emphasized the importance of consumer education in promoting social welfare; what is more, Zhang and Fan (2022) further argued that consumer education was essential for promoting sustainable consumption and protecting the environment.

This is also in line with the view of Lusardi (2010) who found that the majority of individuals in the United State of America, had low levels of financial literacy and do not make provisions against shocks. Lusardi (2010) attested that financial literacy training has helped consumers on borrowing, saving and investment portfolios globally such as Britain, Canada, Germany and United States where it is in use.

The findings of this study are consistent with earlier research on model of goal directed behaviour by Arora et al. (2021), who found that consumers behaviour is determined by positive and negative anticipated emotions, attitudes and subjective norms frequency and recency of past behaviour and desire, and by creating desire for financial knowledge and capacity one activates its intentions for responsible financial behaviour.

The findings of this study are also supported with theories underpinning consumers' financial capability such as capability approach theory by Robeyns (2021) and consumers' financial capability theory by Lučić et al. (2023) who pointed out that consumers' advantage lies in their actual ability to achieve valuable functions for various aspects of life in a combination with quality of life and financial literacy presents valuable skill which contributes to financial capability therefore leading to the creation or can create financial well-being.

The Regression analysis on post assessment scores are presented *in table 5 attached as appendix 3.* In the regression of the on the impact of consumer literacy training among South Africans on the independent variables, the findings revealed that the constant all have positive and significant relationships with financial capability among South Africans. This result suggests that, on average, an increase in these variables would result in an increase in financial literacy, albeit insignificantly. Thus, all variables positively influence and enhance financial capability of South Africans.

Based upon the regression analysis results from on the impact of consumer literacy training in enhancing financial capability among south Africans, the researcher can therefore, draw a valid conclusion on the critical role of consumer literacy training as an effective instrument in elevating financial knowledge among South Africans. This implies the increase in the consumer literacy training is positively associated with an increase their skills and knowledge financially. This finding is also overwhelmingly supported in the literature (Xiao and Bialowolski, 2023, Xiao, 2016, Xiao et al., 2015, Xiao et al., 2014).

5. Contribution to the science, conclusion and recommendations

Evidence showed gaps and issues regarding consumer financial capability, both globally and in South Africa. The focus of this study has been on the urgent need for consumer financial literacy training on prerequisites and outcomes of consumer financial capability among South Africans in Gauteng and Mpumalanga Provinces. Regression analysis, correlation analysis and descriptive statistics among 10300 participants after training intervention completion show a statistically significant relationship among all the study variables.

Overall, the descriptive statistics, and correlation analyses of the participants in the financial literacy study reveal a statistically significant relationship among all the variables under investigation. This study suggests that consumers should consistently update their financial knowledge and skills through consumer financial capability training. Furthermore, advocating for the development and implementation of consumer education policies in South Africa is essential to empower consumers and enhance their financial capability. This study has made both practical and theoretical contributions to the field of consumer financial capability. The results are expected to boost the level of consumer financial capability among South Africans, thus contributing to their financial well-being. The empirical findings of this study have potential implications for policymakers, financial literacy educators, and finance practitioners, who play crucial roles in promoting consumer financial education, especially in South Africa. The study will shed new light on the key determinants of consumer financial capability, assisting South Africans in making informed and prudent financial decisions. Moreover, the idea of developing a consumer financial capability index emerges as an intriguing research proposition. Future research endeavours could explore consumer financial capability across South Africa, employing mixed methods to gain a comprehensive understanding of the topic.

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Dr. Lawrence Gadzikwa is the *CEO* of Hand in Hand SA and *founder* and *Managing Director* of BlaPau Management Consulting, a company specialising in strategy development and execution across different sectors. Lawrence is a seasoned management consultant with broad consulting experience in strategy and management processes accumulated over 20 years of working in both public and private sectors and as an entrepreneur. Over the years, Lawrence has delivered practical and relevant outcomes to clients in the following areas: Enterprise Development & Entrepreneurship; Business Performance Improvement; Cost Reduction and Revenue Enhancement; Programme Design, Monitoring & Evaluation; Research, Agriculture and Agribusiness, Business Modelling, and Cleaner Production Assessments (CP) – Resource Efficiency Audits – Energy, Water, Material. Lawrence is responsible for leading flagship projects funded by ABSA, UN Women, and Save the Children and National Youth Service (NYS). Currently, Lawrence is an Honorary Research Fellow in SAEF at the University of KwaZulu-Natal. Lawrence is a holder of a CIS diploma from the Institute of Chartered Secretaries and Administrators, and BSc, MSc and PhD Degrees in Agricultural Economics.

Appendix 1

Table 3: Demographic data

Response type	**Questionnaire items**	**%**
Respondent's Local Municipality	Bushbuckridge municipality	**2228(21.6%)**
	City of Johannesburg	**2004(19.5%)**
	City of Tshwane	**410(4.0%)**
	Dr. J.S. Moroka	**98(1.0%)**
	Ekhurhuleni Local Municipality	**2193(21.3%)**
	Emakhazeni Local Municipality	**163(1.6%)**
	Emfuleni Local Municipality	**566(5.5%)**
	Midvaal Local Municipality	**124(1.2%)**
	Lesedi Local Municipality	**538(5.2%)**
	Sedibeng Local Municipality	**111(1.1%)**
	Emalahleni Local Municipality	**282(2.7%)**
	Nkomazi Local Municipality	**680(6.6%)**
	Mbombela Local Municipality	**20(.2%)**
	Mashishing Local Municipality	**503(4.9%)**
	Victor Khanyile Local Municipality	**235(2.3%**
	Thaba Chweu Local Municipality	**145(1.4%)**
	West Rand Local Municipality	**235(2.3%**
TOTAL	**10300(100%)**	
Provinces	**Gauteng**	**6302(61.2%)**
	Mpumalanga	**3998(38.8%)**
TOTAL	**10300(100%)**	
Age	Between 14-20	**5054(49.1%)**
	Between 21-25	**2508(24.3%)**
	Between 26-30	**783(7.6%)**
	Between 31-35	**523(5.1%)**
	Between 36-40	**366(3.6%)**
	Between 41-45	**288(2.4%)**
	Between 46-50	**248(2.4%)**
	51 and above	**530(5.1%)**
TOTAL	**10300(100%)**	
Gender	Female	**7003(68.0%)**
	Male	**3297(32.0%)**
TOTAL	**10300(100%)**	
Ethnic Group	Black	**10218(99.2%)**
	Coloured	**80(.8%)**
	White	**2(.0%)**
TOTAL	**10300(100%)**	
Respondents with bank account	Yes	**7162(69.5%)**
	No	**3138(30.5%)**
TOTAL	**10300(100%)**	
Monthly Income	Between R0 - R20883	**10231(99.3%)**
	Between R20884 and More	**69(.7%)**
TOTAL	**10300(100%)**	

Source: SPSS output.

Appendix 2

Table 4: Level of financial literacy practices and using credit wisely

Variables	**Mean**	**Mean**	**St. Dev**	**St. Dev**	***P-value***
	Pre-test Mar- 22	**Post-test Nov- 22**	**Pre-test Mar-22**	**Post-test Nov- 22**	
It is hard to stick to my spending plan when unexpected expenses arise.	1.61	3.92	.490	.988	<.001***
It is hard to stick to my spending plan when unexpected expenses arise.	1.61	3.78	.491	.943	<.001***
Following a budget every time I spend	1.58	4.20	.497	1.114	<.001***
I control my finances and stick to the budget	1.57	4.47	.497	.723	<.001***
When unexpected expenses occur, I usually have to use credit	1.61	3.78	.490	.980	<.001***
When you don’t have the things you want, you don’t have ‘quality of life’, your standards of living are compromised – so always buy the things you want and desire.	1.60	4.12	.492	.798	<.001***
Whenever you see a sale – buy something! This will help you save money over the long run	1.60	4.29	.494	.761	<.001***
To help you save money, make a shopping list of the things you need, and take enough money with you to buy items that might be on sale.	1.58	4.29	.497	.777	<.001***
Going from shop to shop comparing prices wastes time and creates the risk that the items you wanted to buy will be sold out by the time you return.	1.61	2.20	.491	1.115	<.001***
Having a monthly budget is just a theory – the most important thing that will help you work wisely with your money is to know what you want to buy.	1.58	2.12	.496	1.060	<.001***
It’s difficult to save money monthly when you only have	1.61	2.28	.491	1.065	<.001***

a small amount like R20 left at the end of the month.					
It is important to pay all your accounts on time, except when you can see that you are running short of money.	1.58	3.44	.496	2.054	<.001***
It is not necessary for you to know what your credit report says about you.	1.58	4.39	.497	.766	<.001***
If you have accounts and you have skipped some payments, it is not important to contact your creditors and arrange to catch up.	1.57	3.77	.497	1.818	<.001***
It is useful to have access to credit in times of unforeseen emergencies, family crisis, unexpected illness etc.	1.61	3.92	.490	.961	<.001***
If you are using credit, it is absolutely critical that you pay the due amount in full each month.	1.60	3.87	.492	.999	<.001***
Credit products allow us the benefit of having large items such as homes, cars, and appliances immediately, even though we are still paying for them.	1.60	3.47	.493	1.104	<.001***
You don’t need to understand the terms and conditions in the credit agreement so that you can fully understand your responsibilities.	1.58	3.51	.497	1.125	<.001***
The National Credit Act ensures that all credit providers lend in a responsible way, protecting consumers and preventing consumers from borrowing more than they can repay.	1.61	4.35	.491	.860	<.001***
Is good to use credit to buy things that you want when you don’t have enough cash to afford it.	1.59	1.97	.495	.902	<.001***
I will budget so that I can see what I can afford to do with my money.	1.61	1.33	.491	.493	<.001***
I think a bank account will help me keep my money safe.	1.59	3.05	.495	.784	<.001***
I will avoid buying things on account just because I can	1.58	4.80	.497	.512	<.001***

I will make sure that I really need something before I buy it.	1.61	4.59	.491	.901	<.001***
I will open a bank account and learn how to use it.	1.59	3.95	.495	1.158	<.001***
I will work towards achieving my goals by controlling the way I spend my money.	1.61	2.69	.491	1.103	<.001***
I will save money every month, even if it is just a little for a brighter future.	1.58	4.61	.496	.921	<.001***
I will pay all my bills, on time, every month.	1.58	4.66	.497	.903	<.001***
I will ask for my free credit report every year.	1.57	4.62	.497	.898	<.001***
If I am unable to pay my bills, I will immediately speak to my creditors.	1.58	4.16	.497	.883	<.001***
I find it useful to have access to credit in times of unforeseen emergencies like a family crisis.	1.61	3.34	.491	.534	<.001***
I pay the amount due on my credit in full each month.	1.59	4.55	.495	.500	<.001***
I get large items like appliances immediately, even though I am still paying for them via credit.	1.61	4.93	.490	.426	<.001***
I don’t need to understand my responsibilities that are listed in a credit agreement.	1.58	4.13	.496	.334	<.001***
I am protected by the National Credit Act and it helps me from borrowing more than what I can repay.	1.58	3.94	.497	1.251	<.001***
I read my bank statement regularly	1.59	4.69	.495	1.709	<.001***
My debit/credit card has been declined for insufficient funds	1.58	4.80	.497	.512	<.001***
I will use credit wisely.	1.57	4.59	.497	.901	<.001***

A Likert Scale of 1 =Strongly Disagree, and 2=Strongly Agree *All correlations significant at **P-*value* <.001*****

Source: SPSS output.

Appendix 3:

Table 5: The Regression analysis on post assessment scores

Post Assessment Score	Coefficient	Std. Err.	t	P>t	[95% conf.	interval]
It is hard to stick to my spending plan when unexpected expenses arise.	.0668	.03444	1.94	0.052	.0006	.1343
When unexpected expenses occur, I usually have to use credit	.0080	.04551	0.18	0.646	1.6245	1.0074
Following a budget every time I spend	.0094	.03394	0.28	0.781	.05709	.07597
I control my finances and stick to the budget	.04324	.03762	1.15	0.707	1.8528	1.2572
When you don't have the things you want, you don't have 'quality of life', your standards of living are compromised – so always buy the things you want and desire.	1.5249	.7433	2.05	0.040	.06786	2.9819
Whenever you see a sale – buy something! This will help you save money over the long run	1.3498	.79748	1.69	0.091	.21333	2.9131
Going from shop to shop comparing prices wastes time and creates the risk that the items you wanted to buy will be sold out by the time you return.	.0410	.04066	1.01	0.497	.5850	.2837
Having a monthly budget is just a theory – the most important thing that will help you work wisely with your money is to know what you want to buy.	.2615	.17334	1.51	0.131	.07820	.6013
It's difficult to save money monthly when you only have a small amount like R20 left at the end of the month.	.0604	.08989	0.67	0.501	.11574	.2366
It is important to pay all your accounts on time, except when you can see that you are running short of money.	.04109	.03798	1.08	0.134	2.6116	.34987
If you have accounts and you have skipped some payments, it is not important to contact your creditors and arrange to catch up.	.02186	.03445	0.63	0.526	.0456	.08941
It is useful to have access to credit in times of unforeseen emergencies, family crisis, unexpected illness etc.	.28144	.7932	0.35	0.723	1.2734	1.8363
If you are using credit, it is absolutely critical that you pay the due amount in full each month.	.02611	.03803	0.69	0.076	2.7607	.13795
Credit products allow us the benefit of having large items such as homes, cars, and appliances	.06679	.03123	2.14	0.358	2.4084	.87074

immediately, even though we are still paying for them.						
You don't need to understand the terms and conditions in the credit agreement so that you can fully understand your responsibilities.	.35251	.62860	0.56	0.575	.87968	1.5847
The National Credit Act ensures that all credit providers lend in a responsible way, protecting consumers and preventing consumers from borrowing more than they can repay.	.4966	.35974	1.38	0.167	.20854	1.2017
is good to use credit to buy things that you want when you don't have enough cash to afford it.	.1558	.91364	0.17	0.865	1.6350	1.9468
I will budget so that I can see what I can afford to do with my money.	.0568	.11997	0.47	0.636	.17835	.29199
I think a bank account will help me keep my money safe.	.0010	.00570	0.18	0.736	1.7180	1.2137
I will avoid buying things on account just because I can	.0071	.01918	0.37	0.438	1.0916	.47261
I will open a bank account and learn how to use it.	.0007	.04280	0.02	0.670	-2.6652	1.7132
I will work towards achieving my goals by controlling the way I spend my money.	.0028	.00401	0.72	0.533	.33478	.17323
I will save money every month, even if it is just a little for a brighter future.	.8591	.96571	0.89	0.374	1.0338	2.7521
I will ask for my free credit report every year.	.0015	.01718	0.09	0.869	3.6008	3.0432
If I am unable to pay my bills, I will immediately speak to my creditors.	.0006	.01175	0.05	0.809	1.3207	1.0312
I find it useful to have access to credit in times of unforeseen emergencies like a family crisis.	.0012	.00166	0.77	0.442	.5790	.30741
I pay the amount due on my credit in full each month.	.0015	.01718	0.09	0.734	.2912	.20529
I get large items like appliances immediately, even though I am still paying for them via credit.	.0581	.11445	0.51	0.612	.1662	.28249
My debit/credit card been declined for insufficient funds	.0086	.07502	0.12	0.908	.1383	.1557
I am protected by the National Credit Act and it helps me from borrowing more than what I can repay.	.2048	.59678	0.34	0.731	.9649	1.374
_cons	**8.7985**	**.13540**	**64.98**	**0.000**	**8.5331**	**9.0640**

Source: STATA output.

IMPACT OF ENVIRONMENTAL ADVERTISING ON CUSTOMERS' PATRONAGE DECISION IN NIGERIA BANKS

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Abstract
This research study examined the impact of Environmental Advertising on Customer's Patronage Decision in Nigerian Banks. The survey research method was engaged for the purpose of this research study. The primary source of data was employed and the research questionnaire was the instrument of data collection. The study population was 384 out of which a total of 250 representing 65.1% was retrieved from the various respondents who are customers of the Tier 1 banks in Nigeria. Data collected was analysed using the Simple Regression Technique and this was done with the aid of Statistical Package for Social Sciences (SPSS) 21. The result of the tested hypothesis using the Simple Regression Technique showed a p value less than 0.005 which indicates the rejection of the null hypothesis and the acceptance of the alternate hypothesis that states that Environmental response has a significant impact on customer's patronage decision of Nigerian banks. Consequently, the study recommended that Banks should pay more attention on creating a good ambience at their various branches as this has a significant impact on their customer's patronage decision.

Keywords: Banks, Customer, Environmental Advertising, Patronage Decision

JEL classification: M37.

1. Introduction
The reason why businesses operate is solely for profit/wealth maximization and this they arrive at by generating adequate sales from their products that would cover the operating cost and help generate sufficient profit. According to Riaz (2015), the first step in budgeting is the determination of organization's sales estimate. This is because sales estimate has to be determined before arriving at the production units. Decision on sales is indeed a herculean task as making accurate potential customer's demands isn't an easy task. Going by the effect sales has on the survival of business and its connection with customers, it is expedient that organizations engage in such activities that influence positively the decisions

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of consumers toward the purchase of a product (Ayanwale, Alimi and Ayanbimipe, 2005). One of such activities that can be engaged in is Advertisement.

Advertising has been said to be as old as mankind and the urge to advertise, a part of human nature (Keller, 2005). Today, the advertising industry is a significant industry affecting globally the lives of individuals and corporate entities. According to Kenneth and Donald (2010), a good advertisement possesses the ability to persuade consumers to participate in the purchase of a particular product and keeps them motivated to embark on a specific action. In Nigeria and several other countries, advertising has been and is still a persuasive and intrusive socio-economic force that cannot be downplayed by either manufacturers or customers (Agwu, 2012). Advertising as a medium of communication invades our homes, offices, streets, villages, cities etc and pushes in such messages about the different products, services, ideas, persons and institutions via the different media outlet (Ozoh, 1998). Going by the significant influence advertisement has on the buying decision of consumers, most companies today have identified several modes of advertisement. Of these modes of advertisement some of which include; radio, social media internet platform (facebook, twitter, whatsapp, instagram, tread, youtube etc), television, newspaper, bill board, one of the less researched mode is environmental advertising.

Environmental advertising is said to be any attempt made to influence customer's attitudes, cognitions and behaviours through the promotion of environmentally friendly features in the process of producing, distributing or recycling products or services. Environmental Advertising possess the ability to increase customers' patronage. According to Viresh (2021), previous studies on the purchase environment has revealed the significant role environmental advertising plays on impulse buying of consumers in a retail setting. However, because of the capital intensive nature of the different modes of advertisement, it is pertinent that studies are carried out to determine the most effective advertising mode per industry.

In addition, the instability in the global financial market and increasing number of banks who are offering similar services has brought about the urgency in the need to attract and retain ccustomers's of different bank services. As a result of this competitive nature in the banking industry, different banks are engaging different type of advertising modes to ensure that they maintain and increase their market share and attract as many consumers as possible. This is why banks must not be in a hurry to advertise as the type of advertising goes a long way in determining its effectiveness. This study seeks to therefore determine the impact environmental advertising mode on the patronage decision of customers of Nigerian banks.

Hypothesis

H_{01} Environmental Advertising does not have any significant impact on customers' patronage decision in Nigerian banks.

2. Review of Literature

2.1. Concept of Advertising

Research has over the years shown clearly the importance of advertising as it performs diverse functions when effectively and efficiently engaged. Advertising according to Arens, Schaefer and Weigol (2009) aids the identification of products, differentiates a brand from another, communicates information about the products (its features), discloses to potential buyers the location of sale, induces new products/suggests a re-use and stimulates the distribution of products/services on nationwide or world-wide level.

Advertising according to Dinu and Dinu (2012) can help organizations to develop consumer's awareness to a need that hasn't been met, introduce a product/service that can be considered valuable by consumers and drive consumers demand through the promotional tool of advertising. Belch and Belch (1990) added that advertising can be used in the creation of images and can serve as a symbolic appeal for a product/service. They added that advertising possess the ability to hit a response chord with consumers particularly where other elements of a marketing strategy fails. Furthermore, they added that effective communication done through advertising leads the consumer towards the purchase of a brand.

Organizations uses advertising as a means of survival from the effect of economic trends. Advertising is important as it can lead an organization to competition, provides the exact/right volume of information regarding a product/service, helps in the delivery of satisfaction to consumers and affects generally the consumer (Vivekananthan, 2010). According to Rahman (2012), advertising plays a significant role in the movement of products and services from producers to consumers. This role would definitely help in the enhancement to a considerable level, of the Gross Domestic Product of a nation (GDP).

Advertising has the ability to increase mass marketing in addition to helping consumers choose amongst varieties of products and services. It is an economic movement with a singular objective of increasing consumer's demand for a product as well as increasing the volume of sales. As a result of the highly informativeness of advertising, customers are presented with diverse product attributes or features that could lead to positive and favourable attitude towards a particular brand. According to Arens (1996), individuals are informed from advertisement via the attractiveness of the message content, the attention it commands and the awareness it gives.

2.2. Environmental Advertising and Customer's Patronage Decision

Any attempt made at influencing customers' attitudes, cognitions and decision by way of promoting environmentally friendly features in the course of producing, distributing or recycling products or services is known as Environmental Advertising. According to Adelaar, Charig, Lanchnolorfer, Lee, and Morimoto (2003), environmental response makes available to consumers different types of experiences which are then engaged in promoting and selling products and services, organizations usually offer different customer's with specific types of media experiences which would then be used as a platform for promoting the sales of related goods and services.

According to Morris and Bourne (1998) several researches in the past had made attempt to explain the effect different environmental conditions (for instance background music at the time of purchase, atmosphere of the retail store amongst others) have on buying decision of consumers. It has also been discovered that certain sense modalities such as touch, sound and sight can affect a user's buying experience. Music, image, music video and test lyrics which are strongly related to one another and are shown in advertisement, can influence the patronage decision of a consumer. As a result of this, the environmental psychology model proposed that retailing stores should create an atmosphere that produces an emotional state in consumers with such emotional state categorized into arousal, pleasure, dominance or a buying situation. Environmental advertising in consumer buying behaviour refers to a buying response prompted by the influence of the environment. The environmental psychology model defines media that makes available information represented by the combination of sound, sight and touch sources. It bothers on various areas of visual and verbal messages with which individuals derive information. According to Adelaar et al. (2003), this verbal and visual information affects the perception of consumers concerning the environment's stimuli

2.3. Stages of Consumers Buying Process

According to Backhaus and Van Doon (2007), customers would usually go through a five stage decision making process in every purchase they intend to make. This five-stage decision has been summarized diagrammatically below:

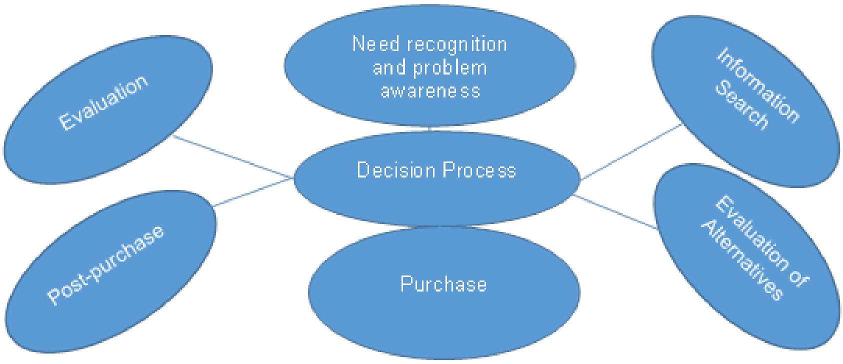

Figure 1. The Consumer Patronage Decision Process
Source: Backhaus and Van Door (2007)

The above model is said to be an important aspect for both the marketer and the consumer making marketing and purchase decision as both parties are made to consider the entire buying process as opposed to the purchase decision. Although the model suggests that every customer passes through all the five stages in every purchase, consumers can however in more routine purchase skip or reverse some of the stages (Chironga, Leke, Lund, and Wamelen, 2011).

2.4.Theoretical Framework. Traditional Attitude Theory
The Traditional Attitude Theory was adopted for the purpose of this project work. This theory postulates that consumer behaviour is dependent on the behaviour of consumers particularly at the point of buying a brand of a product. According to Smith and Winyard (1983) as cited in the works of Ghuman, Javana Burhan and Ahmed (2017), attitude refers to a behaviour disposition. Behaviour was according to Adelaar et al. (2003) suggested to arise as a result of emotional response which will usually be affected by three independent factors that include: dominance, pleasure and arousal. Attitude forms a central element that influences consumer’s behaviour. Buyer’s values, beliefs and norms have the ability to mold their attitudes towards a specific product and contributes immensely to their buying decision. The resonation of attitude with a specific product attribute affects consumer purchase behaviour.

2.5 Empirical Review
There has been quite a few research work on the impact of Environmental Advertising on Consumer’s Buying Decision. A study was carried out by Chukwu, Kanu and Ezeabogu (2019) and findings from the study revealed that environmental response on brand has a positive and significant effect on consumer buying behaviour. In another study carried out by Lubna, Munham Shehzad and Saba Arshad’s (2017) on the effect of television advertising on user’s behaviour in cellular companies, findings from the study revealed that television advertisement significantly influenced the behaviour of users. Pantea, Mohammad and Shahram (2016) embarked on a study on the impact of advertising to attract customers in e-banking services: A case study of the branches of Melli bank in west of Mazandaran province, Iran. Three hundred and fifty-four copies of the research questionnaire were distributed and the multiple regression technique was adopted in testing the formulated hypotheses. The findings of the study revealed that television advertising, radio advertising and oral advertising by the employees of the banks increased the attraction of customers for use of electronic services. However the impact of advertising via brochures, catalogues and the press were not confirmed.
In a study by Nawazish and Ahmed (2015) on the impact of advertising on consumer buying behaviour in Pakistan, the research work focused on the examination of the generation of

emotional responses after watching an effective advertisement. Using a total of three hundred sample size, the authors found out that environmental response and sensory stimulated activities represented in the advertisement has a significant influence on the behaviour of consumers and has the tendency of changing the buying behaviour of consumers. The study discovered that both emotional and environmental responses have significant impact on the buying behaviour of consumers.
A study was carried out by Nawa, Nawazish and Ahmed (2015) on the impact of advertising on consumer buying behaviour in Pakistan. Using a sample of 300, the study examined how emotional responses are generated after watching effective advertisement. The study found out that environmental responses have a significant impact on the buying behavior of consumers. In addition, findings revealed that environmental response and sensory stimulated activities represented in the advertisement can influence and change the consumers buying behavior. Ghulan, Javana, Burham and Ahmed (2012) carried out a study on the impact of advertising on the buying behavior of consumers in Pakistan. Specifically, the study examined the relationship that exists between environmental response and the buying behavior of consumers. A total of 200 people in the twin cities of Pakistan was engaged as the sample for the study. The study found out that there exists moderate relationship between environmental response and consumer buying behavior. The result showed that consumers would usually buy such brands they are emotionally attached to.
A study was conducted by Ayanwale et al (2005) on the impact of advertisement of Bounvita on consumer buying behaviour in Nigeria. Findings from the study revealed that advertising has a significant influence on consumer's demand for Bounvita beverage. A study by Adelaar et al (2003) on the shopping behaviour of online compact discs by consumers through emotional advertising in Asia, showed that impulse behaviour is preceded by the intention of consumers to purchase certain products impulsively.

3. Methodology

This research study focus on the impact of Environmental Advertising on Customers' Patronage Decision in Nigerian banks. The study engaged the survey research method. This research method focuses on collecting information from the sample study through their responses to questions which can be used to generalize on the entire population (Check & Schutt, 2012). Customers of the thirteen (13) listed banks in Nigeria was of significant interest to this study going by the level of transparency in their transactions and in their financial statement which is guaranteed by the strongly regulated environment of the Nigerian Stock Exchange Market whose floor these companies are listed. The sample size was the customers of the Tier 1 banks in Nigeria. The Tier 1 banks in Nigeria was selected on the basis that they are the leading banks in terms of the value of loans made available to borrowers, asset base and customer's deposit (StearsBusiness, 2020). As a result of the fact that the population of these Tier 1 banks are infinite, the study engaged the Cochran's Formula for sample size determination when a population is infinite. The formula is as seen below:

$$n_0 = \frac{z^2pq}{e^2}$$

Where
n_0 = sample size,
z = selected critical value of desired confidence level,
p = estimated proportion of an attribute present in the population and;
e = desired level of precision.

With a maximum variability of 50% where p = 0.5; confidence level = 95% with ± 5% precision, the calculation for the required sample size is stated as follows:

p = 0.5
q =1-0.5 = 0.5;
e = 0.05;
z = 1.96

$$n_0 = \frac{(1.96)^2 * (0.5)*(0.5)}{(0.05)^2}$$

$n_0 =$ **384.16**

$n_0 =$ **384**

From the above, the Sample Size for the purpose of this study is 384**.** The primary source of data was engaged in the course of this study and the type of primary data engaged is the research questionnaire. Copies of the research questionnaire being the research instrument engaged for the purpose of this project was administered to a total of three hundred and fifty (350) customers of the Tier 1 listed banks in Nigeria. Of the three hundred and fifty copies of the questionnaire administered, a total of two hundred and fifty representing 65.1% was retrieved from the various respondents. The sampling technique used include the Simple random sampling technique (as this technique allows for every member of the population to have equal chances of selection) and the Purposive sampling technique (this technique was adopted based on the fact that the banks selected met the criteria of being a Tier 1 bank). The content validity method was adopted in ensuring the validity of the research instrument. This was done by exposing the research instrument to experts within and outside the field of management with their suggestions/corrections implemented before administration to the various respondents (Okpala, 2012). Similarly, the Cronbach Alpha test was carried out to determine the reliability of the research instrument. The result of the test showed a reliability score of 0.712. According to Pallant (2005), a reliability test result of 0.7 and above is considered good. Hence, this study's research instrument with a reliability result of 0.712 is reliable.

Table 3.1 Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.708	.712	6

Source: Author's Computation (2022)

Data gathered for the purpose of this study was analysed using the Statistical Tool for Social Sciences (SPSS) and the hypothesis formulated was tested using the Simple Linear Regression Technique.
This study has two variables, the independent variable (Environmental Advertising) and the dependent variable (Customer's patronage decision). The independent variable (Environmental Impact) is proxied by Ambience, Sounds, Pictures and Images while the dependent variable (Customer's patronage decision) is proxied by Satisfaction of intention

4. Result

The hypothesis formulated for the purpose of this study was tested using the Simple Linear Regression Technique and the result is presented below.

Table 4.1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.233[a]	.054	.050	.984

Source: Author's Computation (2022)
Note: a. Predictors: (Constant), The different pictures, images etc influenced your decision to open an account with your bank

Table 4.1 labelled *Model Summary* provides the R and R^2 values. The R value of 0.233 (23.3%) indicates the degree of correlation. The R^2 value of 0.054 indicates the extent of the total variation in the dependent variable, Customer's Patronage Decision that can be explained by the independent variable, Environmental Response. From the above result in Table 4.1, 5.4% of the variation in Customer's Patronage can be explained by Environmental Advertising.

Table 4.2 ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.778	1	13.778	14.219	.000[b]
	Residual	240.306	248	.969		
	Total	254.084	249			

Source: Author's Computation (2022)
Note: a. Dependent Variable: Your decision when it comes to opening an account in your bank depends on the advertising strategy of the bank (Satisfaction of intention)
b. Predictors: (Constant), The different pictures, images etc influenced your decision to open an account with your bank

The significance column under the Regression row indicates the statistical significance of the regression model that was run. From the table, $p<0.0005$, which is less that 0.05. It therefore imply that the regression model statistically predicts the outcome variable. That is, it is a good fit for the data.

Table 4.3 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.375	.204		16.528	.000
	The different pictures, images etc influenced your decision to open an account with your bank	.193	.051	.233	3.771	.000

Source: Author's Computation (2022)
Note:a. Dependent Variable: Your decision when it comes to opening an account in your bank depends on the advertising strategy of the bank (Satisfaction of Intention)

The Coefficient table provides information to predict consumer's patronage decision from Environmental Advertising. The Table also gives information as to whether or not Environmental advertising contributes statistically significantly to the model. The t statistics and its associated p value shows whether or not the individual variable has an effect on the dependent variable. With $p<0.005$, the independent variable has an effect on the dependent variable.

DECISION: Reject the null hypothesis and accept the alternate hypothesis that states that Environmental Advertising does have a significant impact on consumer behaviour of Nigerian banks.

5. Conclusion and Recommendations

In today's world and with the high level of competitive atmosphere of most companies, the use of advertisement from one sector to the other to introduce organization's products and services cannot be over-emphasized as this tool plays a significant role in influencing and motivating customers in obtaining the product/service. It can be said that effective and continuous advertising is one of the most pivotal function of any successful business. Banks over the years in Nigeria engaged time and time again advertising tool to bring to the knowledge of their customers their products and services. The goal of every advertiser is to increase sales and this can only be achieved by drawing the attention of the people to these products. Most banks strive to reach their prospective customers by influencing their awareness, attitudes and buying behaviour and one of the modes for advertising is environmental advertising as this mode of advertisement increases impulse buying by customers.

Going by the importance of Environmental advertisement as a promotional tool, it is essential to examine the impact this tool indeed has on the buying behaviour of consumers. This study therefore examined the impact of Environmental Advertising on Customer's Patronage Decision in Nigeria Banks. Findings of the study revealed that Environmental Advertising has an impact on the buying decision of consumers. The study therefore recommends that Nigeria banks should focus on building a good ambience in their banks and create a most comforting and electrifying environment that will suffice to attracting both existing and potential consumers. Additionally, Banks should also place emphasis on other factors that can, asides advertising help build and secure their customer base. Some of these factors include emotional response, psychological factors and social factors.

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YOUNG FEMALE ENTREPRENEURIAL ORIENTATION IN A CONTEXT OF CRISIS. THE CASE OF A DEVELOPING COUNTRY

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Abstract: *Entrepreneurship serves as a catalyst for economic development, particularly during crises, as it fosters economic resilience through the establishment of new enterprises and the creation of employment opportunities. Women possess a significant entrepreneurial potential, and nurturing this potential could empower women to contribute substantially to sustainable economic growth. This paper investigates the relationship between the entrepreneurial orientation (EO) of female students in Cluj-Napoca and their entrepreneurial intention (EI). Given the current context of crisis (marked by a post-pandemic situation, Ukraine war, energy crisis and high inflation) we have also studied its impact on the entrepreneurial orientation. To achieve these research objectives, we have employed a questionnaire-based survey among 231 female students from Cluj-Napoca enrolled in all three levels of study (bachelor, master, and PhD). The results show that the entrepreneurial orientation of students (as a unidimensional construct) has a significant influence on their entrepreneurial intentions. Among the five investigated EO dimensions (risk-taking, innovativeness, proactiveness, passion and perseverance), it was found that only passion influences significantly the EI. It was also found that the current crisis is a factor influencing the entrepreneurial orientation of female students. Our study contributes to the body of literature in gender studies and entrepreneurship studies by testing two newly proposed EO dimensions: passion and perseverance. The practical implications of our research consist in recommendations for educational institutions and policymakers for designing more effective entrepreneurship education programs and support policies for women pursuing an entrepreneurial career.*

Keywords: entrepreneurial orientation, entrepreneurial intention, female students, crisis

JEL classification: L26.

1. Introduction

Entrepreneurship and innovation have long been recognized as critical drivers of wealth and sustained economic development (Romer, 1994; Prabha Devi et al., 2019; Hernández-Sánchez et al., 2020; Lee & Rodríguez-Pose, 2021). During periods of crisis, the creation of new businesses plays a pivotal role in generating jobs and supporting the local economy (Dana, 2004). Consequently, investigating the factors influencing the choice of an

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entrepreneurial career remains a pertinent research topic (Pruett, 2009; Uansa-ard and Wannamakok, 2022).

The 2021/22 GEM Women's Entrepreneurship Report emphasizes a global gender disparity in startup engagement, revealing that women are less involved in entrepreneurial activities compared to men. Globally, statistics indicate that two out of every five early-stage entrepreneurs, one in three high-growth entrepreneurs, and one in three innovation entrepreneurs focused on national and international markets are women (GEM, 2022). As such, it can be argued that women possess an important entrepreneurial potential and if this potential is discovered and nurtured women could contribute to sustainable economic growth.

Building on the global perspective presented by the GEM report, it is essential to examine the local landscape to gain a comprehensive understanding of the challenges and opportunities women face in entrepreneurship. According to the National Institute of Statistics (NIS), the yearly survey on new businesses and the profile of Romanian entrepreneurs reveals a significant gender disparity. More than half of the companies in Romania are established by men, and there has been a minor decrease in the share of female founders from 38.5% in 2020 to 38.4% in 2021 (NIS, 2023).

Cluj-Napoca, one of Romania's largest university centres that attracts students from all Romanian regions, provides a unique context for exploring female entrepreneurship. According to NIS data, there were 71,720 students in Cluj-Napoca in 2021, with a notable majority being female (56.92%).

Previous research focusing on gender differences in entrepreneurship have yield mixed results. While some did not found differences between men and women, others argued that women entrepreneurs differ from men with respect to characteristics, motivation, entrepreneurial skills (Chhabra, Raghunathan and Rao, 2020). To gain deeper insights, it is imperative to conduct research that delves into the attitudes of female students toward entrepreneurship and explores the factors that significantly influence their entrepreneurial inclinations. Understanding these dynamics could pave the way for targeted initiatives to empower and encourage more women to pursue entrepreneurial ventures, thereby fostering a more inclusive and diverse business landscape.

Specifically, this research explores the relation between entrepreneurial orientation and the entrepreneurial intention of female students from Cluj-Napoca. Furthermore, it aims to explore the influence of each dimension of entrepreneurial orientation on entrepreneurial intention by including in the study besides the core dimensions of EO (innovativeness, risk-taking and proactiveness), two relatively new dimensions that were not previously studied in the Romanian context: passion and perseverance. To ensure the study reflects the current post-pandemic situation, the War in Ukraine, the energy crisis, and high levels of inflation, the research also investigates the impact of this crisis context on entrepreneurial orientation. By addressing these multifaceted aspects, the study aims to contribute valuable insights for fostering female entrepreneurship in the face of contemporary challenges.

2. Literature Review and Hypotheses development

Orientation, as a notion seen from an entrepreneurial perspective, has received many labels over time, such as entrepreneurial orientation, intensity, posture, or even corporate orientation (Zahra, 1999). Clearly, entrepreneurial orientation captures, in fact, the decision that an individual can take in the possible future, without being forced to do it in the present (Arrighetti et al., 2013).

Over the years, the topic of entrepreneurial orientation has been increasingly approached by researchers, being seen in most cases from a company's perspective, determining its performance. However, more recent studies have shown that entrepreneurial orientation can also be seen from the perspective of an individual (Robinson and Stubberud, 2014). On an individual level, entrepreneurial orientation denotes the personal attributes or predispositions that may heighten the inclination to participate in entrepreneurial endeavours (Bolton and Lane, 2012). Although we are talking about a new way to look at this phenomenon, some studies support that individual entrepreneurial orientation is a multidimensional construct that includes similar elements to firm-level entrepreneurial orientation. Therefore, some studies demonstrate that individual entrepreneurial orientation and a company's success are positively corelated (Bolton and Lane, 2012; Chien, 2014).

In order to determine entrepreneurial orientation, specific dimensions of it were developed. Initially, Miller (1983) proposed three dimensions: risk-taking, innovativeness and proactiveness. Lumpkin and Dess (1996) have proposed a five dimensions construct including, besides the initial dimensions, autonomy and competitive aggressiveness. The literature has demonstrated that these characteristics and abilities of entrepreneurs represent the foundation of entrepreneurial orientation.

When we refer to the dimensions of entrepreneurial orientation two dominant perspectives can be identified in previous research. The first perspective, the unidimensional one, emphasizes that innovativeness, risk-taking and proactivity must be considered simultaneously when measuring entrepreneurial orientation thus it is a construct that needs to be examined as a whole (Gupta and Gupta, 2015). The other perspective, the multidimensional one, suggests that if any of the entrepreneurial dimensions (risk-taking, innovativeness, proactiveness, competitive aggressiveness, and autonomy) are present, the label of entrepreneur can be used (Hughes and Morgan, 2007).

Entrepreneurial based research managed to develop models that can link the intention to implement specific actions in the present with the benefits they could bring in the future. These models are considered compelling because they have excellent predictive power. The most used point of reference is the concept of entrepreneurial intention. This term can be defined as the certainty that a person intends to open a business at a certain point (Thompson, 2009).

The individual entrepreneurial orientation as one of the predictors of entrepreneurial intention has been the focus of previous research (Ekpe and Mat, 2012; Ibrahim and Lucky, 2014; Koe, 2016; Twum et al., 2021). A study carried out on students from Nigeria in 2014 demonstrated the fact that there is a reasonably close relationship between entrepreneurial orientation and entrepreneurial intention (Ibrahim and Lucky, 2014). Another study conducted in Nigeria, but among female students only, confirms the relationship between entrepreneurial orientation and entrepreneurial intention (Ekpe and Mat, 2012). Moreover, it was demonstrated that students from the universities of Vienna and Munich have lower entrepreneurial intention than those from the USA, even though the latter study in the technical field (Franke and Lüthje, 2004). These findings led to the formulation of the first hypothesis:

> ***H1:*** *The entrepreneurial orientation of female students in Cluj-Napoca positively influences their entrepreneurial intention.*

Innovativeness refers to perceiving and acting on entrepreneurial activities in new and unique ways (Robinson et.al, 1991; Koh, 1996). According to a definition offered by Lumpkin and Dess (1996, pp.142) innovativeness represents "the tendency to engage in and support new ideas, novelty, experimentation and creative processes that may result in new products, services or technological processes". At the individual level, Koh (1996) considers that entrepreneurs are more innovative than people who do not own a business.

A study conducted by Law and Breznik (2017) showed that engineering students have a higher level of innovativeness than those studying in other fields. However, innovativeness does not significantly influence their entrepreneurial intention. On the other hand, other studies among students have shown that innovativeness significantly influences entrepreneurial intention (Koe, 2016). Thus, we have postulated the second hypothesis:

***H2**: Innovativeness positively influences the entrepreneurial intention of female students in Cluj-Napoca.*

Risk-taking, one of the most important dimensions of entrepreneurial orientation alongside innovativeness, denotes the willingness of entrepreneurs to undertake perceived risks in pursuit of their objectives and the attainment of success (Lumpkin and Dess, 1996). According to Gürol and Atsan (2006), risk-taking propensity refers to a person's tendency to either avoid or to take risks when faced with situations involving uncertainty or potential hazards. The willingness of achievement can represent a goal that is meant to motivate a person to take risks (McClelland, 1961). Researchers believe that individuals with a greater risk-taking propensity are more likely to become entrepreneurs and have success (Twum et al., 2021). Studies conducted among students have shown that risk-taking, as a dimension of entrepreneurial orientation influences their entrepreneurial intention (Ilevbare, et al., 2022). As such our third hypothesis is:

***H3**: Risk-taking positively influences the entrepreneurial intention of female students in Cluj-Napoca.*

Proactiveness refers to the ability to think and act in an anticipatory manner on future needs and problems or changes in market opportunities (Lumpkin and Dess, 1996; Lumpkin and Dess, 2001). The concept suggests the desire to look for opportunities in advance and to have a future-oriented perspective so that current resources can be used to introduce special services and products before competitors (Lumpkin and Dess, 2001; Rauch et. al, 2009). As in the case of the other dimensions, some studies confirm the link between proactiveness and entrepreneurial intention (Mustafa et al., 2016; Koe, 2016; Lestari, Rizkalla and Purnamaningsih, 2022). In line with this finding, we have formulated the following hypothesis:

***H4:** Proactiveness positively influences the entrepreneurial intention of female students in Cluj-Napoca.*

Due to extensive debates among researchers regarding the most optimal way to measure entrepreneurial orientation, certain scholars advocated for the incorporation of additional dimensions into EO (Rauch et. al, 2009, Covin and Miller, 2014). Recent studies have responded to this need by introducing two new dimensions: passion and perseverance (Gerschewski et al., 2016; Santos et al., 2020).
Passion, seen from the perspective of entrepreneurship, was defined as a set of positive emotions felt and experienced by an individual regarding entrepreneurial activity and the roles considered to be important. Passion is a fundamental emotion, being important in everyday activities, but especially in business (Cardon et al., 2009). Some studies confirm the link between passion and entrepreneurial intention. One of these was carried out in 2021 among students in Pakistan and showed that passion help improve students' entrepreneurial intention (Anjum et al., 2021). Accordingly, we have formulated the fifth hypothesis:

***H5:** Passion positively influences the entrepreneurial intention of female students in Cluj-Napoca.*

Perseverance is defined as an important pillar in developing the ability to start and lead a business (Baum and Locke, 2004). This dimension of entrepreneurial orientation is closely related to a continuous pursuit of set goals despite the obstacles that inevitably appear (Van Gelderen, 2012). According to Baum and Locke (2004), perseverance includes maintaining a goal-oriented action and energy, even when adverse situations arise. The inclination to stay focused on goals is associated with entrepreneurial status and success (Covin and Miller, 2014; Gerschewski et al., 2016). Taking these elements into account we have formulated the following hypothesis:

> ***H6:*** *Perseverance positively influences the entrepreneurial intention of female students in Cluj-Napoca.*

Arrighetti et al. (2016) argued that crisis can negatively affect the rate of new businesses creation, due to worsening economic environment and the deterioration in the quality of business opportunities. Devece et al. (2016) described how push factors related to economic crises can determine people to start a business for two reasons: firstly, due to lack of viable alternatives and secondly, due to difficulties in trying to find a job related to education, race, class, or gender. Considering these aspects, we have postulated the hypothesis:

> ***H7:*** *The crisis influences the entrepreneurial orientation of female students in Cluj-Napoca.*

Considering all the posited hypotheses the research model represented in Figure 1 is proposed for further analysis.

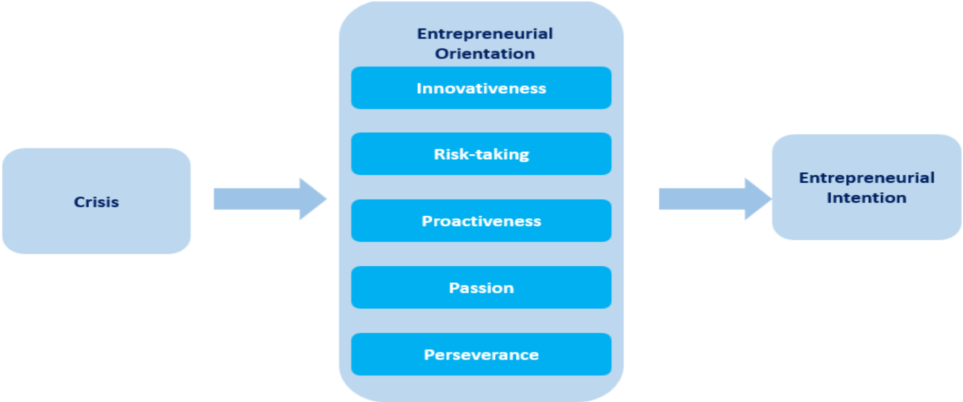

Figure 1. Research model
Source: Author’s analysis/processing based on own data

3. Research Methodology

A questionnaire-based survey was conducted in order to collect the data. The questionnaire has been implemented online as this facilitates the collection of responses offering also the possibility to reach a larger number of respondents. The questionnaire was distributed to female students from Cluj-Napoca from all three levels of studies (bachelor, master, and PhD) and all forms of education. The data collection took place between March and June 2023 and we have collected 231 valid responses.
Regarding the characteristics of the sample analysed, 61,9% of the respondents were between 21 and 23 years old, followed by those between 18 and 20 years old, with a percentage of 22,1%. Almost three-quarters of the female students (72,7%) study at “Babeș-Bolyai” University, 13,9% at “Iuliu Hațieganu” University of Medicine and Pharmacy” and 8,2% at Technical University of Cluj-Napoca. The fields of study were Economics (51,1%),

Medicine, Pharmacy and Dentistry (14,3%), Engineering (4,8%), Communication Sciences (4,3%), Computer Sciences and IT (3,9%), Sociology (3,5%) and other fields (18,1%). Considering the study level, 70,1% were bachelor students, 26,8% were master students and 3% were PhD students. Moreover, 8,3% of the respondents currently own a business, while more than half of them (56,7%) have family members who are entrepreneurs (parents, grandparents, siblings, aunts, uncles, or cousins).
The measurement instrument developed and validated by Santos et al. (2020) was used for assessing five entrepreneurial orientation dimensions, namely risk-taking, innovativeness, proactivity, passion and perseverance. The scale developed by Liñán and Chen (2009) was used to measure the entrepreneurial intention of female students. We used the scale developed by Uansa-ard and Wannamakok (2022) to measure the crisis impact. We have adapted this scale to reflect the 2023 crisis by replacing the word “COVID” by “actual crisis”. All items were measured using a 7-point Likert scale (1= ”Strongly disagree”, 7= ”Strongly agree”).

Table 3: Measurement instrument

Variable	***Code***	***Items***	***Sources***
Risk-taking	***RISK1***	*I like to venture into the unknown and make risky decisions*	Santos et al., 2020
	RISK2	*I am willing to invest a great deal of time and/or money into something that can give high returns.*	
	RISK3	*I tend to act boldly in risky situations.*	
Innovativeness	***INNOV1***	*I often like to try new and unusual activities.*	
	INNOV2	*In general, I prefer a strong emphasis on innovative approaches rather than previously tested and used approaches.*	
	INNOV3	*I prefer, when I learn something new, to try to do it my way than to do it like everyone else does.*	
	INNOV4	*I am in favour of trying out new approaches to problem solving rather than using methods that others often use.*	
Proactiveness	***PRO1***	*I usually act in anticipation of future problems, needs or changes.*	
	PRO2	*I tend to plan projects in advance.*	
	PRO3	*I would rather get up and put projects in motion than sit around waiting for someone else to do it.*	
Passion	***PAS1***	*I have a passion for finding good business opportunities, developing new products or services, exploiting business applications and creating new solutions for existing problems and needs.*	
	PAS2	*I am passionate about the process of gathering the financial, human and social resources (e.g. contacts and partnerships) needed to create a new business.*	

Variable	***Code***	***Items***	***Sources***
	PAS3	*I have a passion for envisioning, growing and expanding my business.*	
	PAS4	*I am passionate about what I do, and, when I am away from my business, I cannot wait to return.*	
Perseverance	***PER1***	*I have achieved goals that took me some time to reach.*	
	PER2	*I have overcome setbacks to meet major challenges.*	
	PER3	*I always finish what I start.*	
	PER4	*Setbacks do not discourage me.*	
	PER5	*In many complex situations, I persist in achieving my goals despite seeing others give up*	
Entrepreneurial intention	***INTENT1***	*I am ready to do anything to be an entrepreneur*	Liñán &Chen, 2009
	INTENT2	*My professional goal is to become an entrepreneur*	
	INTENT3	*I will make every effort to start and run my own firm*	
	INTENT4	*I am determined to create a firm in the future*	
	INTENT5	*I have very seriously thought of starting a firm*	
	INTENT6	*I have the firm intention to start a firm some day*	
Crisis perception	***CRISIS1***	*I believe that the actual crisis will slightly affect my future career as an entrepreneur.*	Uansa-ard & Wannamakok, 2022
	CRISIS2	*I believe that the actual crisis will slightly affect my future opportunity for my career.*	
	CRISIS3	*I believe that the actual crisis will slightly influence my future plan and decisions.*	
	CRISIS4	*I believe that the actual crisis will slightly influence my future intention to be an entrepreneur.*	
	CRISIS5	*I believe that the actual crisis will slightly influence my thoughts and considerations towards future plans.*	
	CRISIS 6	*I believe that I am still confident about my future career as an entrepreneur.*	

Source: Authors' computation

4. Results and discussion

In order to be able to analyse all the answers and test the formulated hypotheses, we used the IBM SPSS software. In the first phase, we checked the reliability of each scale used. **Table 2** includes the corresponding Cronbach's Alpha coefficient for each dimension of the entrepreneurial orientation and the scales used to measure the entrepreneurial intention and the perception of the crisis. We can observe that, in the case of each scale, the coefficient is greater than 0,7, indicating their reliability.

Table 4: Cronbach's Alpha coefficient of IEO dimensions, Entrepreneurial Intention and Crisis Perception

Variables	Items	Cronbach's Alpha
Risk-taking	RISK1 RISK2 RISK3	0,820
Innovativeness	INNOV1 INNOV2 INNOV3 INNOV4	0,834
Proactiveness	PRO1 PRO2 PRO3	0,792
Passion	PAS1 PAS2 PAS3 PAS4	0,925
Perseverance	PER1 PER2 PER3 PER4 PER5	0,858
Entrepreneurial intention	INTENT1 INTENT2 INTENT3 INTENT4 INTENT5 INTENT6	0,959
Crisis perception	CRISIS1 CRISIS2 CRISIS3 CRISIS4 CRISIS5 CRISIS6	0,822

Source: Authors’ computation

After checking the reliability of each scale, the next step was to determine the mean average for each of the five entrepreneurial dimensions based on the mean of the items describing them. As shown in **Table 3**, the highest average was recorded for proactiveness. In other words, the female students from Cluj-Napoca participating in this study are strong enough to anticipate needs and opportunities that could appear at the market level. At the opposite pole, however, is passion, which has the lowest average among all five dimensions of entrepreneurial intention. The rest of the dimensions register values above 5, suggesting that female students have relatively high skills in terms of entrepreneurial orientation.
To determine the score for the entrepreneurial orientation, we followed the same principle, calculating it as the average of all its dimensions. Thus, the average score for entrepreneurial

orientation was 5,21, meaning that female students from Cluj-Napoca have a reasonably high entrepreneurial orientation.

Table 5: Average scores for entrepreneurial orientation

Variables	Items	Mean	Dimension's mean	Entrepreneurial orientation's mean
Risk-taking	RISK1	4,87	5,13	5,21
	RISK2	5,79		
	RISK3	4,74		
Innovativeness	INNOV1	4,99	5,27	
	INNOV2	4,97		
	INNOV3	5,61		
	INNOV4	5,14		
Proactiveness	PRO1	5,53	5,62	
	PRO2	5,74		
	PRO3	5,61		
Passion	PAS1	4,65	4,68	
	PAS2	4,33		
	PAS3	5,05		
	PAS4	4,69		
Perseverance	PER1	5,46	5,47	
	PER2	5,59		
	PER3	5,54		
	PER4	5,19		
	PER5	5,57		

Source: Authors' computation

Next the formulated hypotheses were tested using linear and multiple regressions. The hypothesis is confirmed, with a probability of 95% if the variable p-Value registers values lower than 0,05.
Table 4 shows the results of the test for the first hypothesis. This hypothesis was confirmed. In other words, the entrepreneurial orientation significantly influences the entrepreneurial intention of female students from Cluj-Napoca. Also, the R^2 coefficient registers the value 0,51, meaning that 51% of the variation in entrepreneurial intention is due to entrepreneurial orientation. This finding is similar with previous researches (Ibrahim and Lucky, 2014; Ekpe and Mat, 2012) that confirmed the relationship between entrepreneurial orientation and entrepreneurial intention.

Table 6: The influence of entrepreneurial orientation on entrepreneurial intention (linear regression results)

	Unstandardized Coefficients		***Standardized Coefficients***			***Collinearity Statistics***	
	B	***Std. Error***	***Beta***	***t***	***Sig.***	***Tolerance***	***VIF***
(Constant)	-1.551	.413		-3.759	.000		
OE	1.199	.078	.714	15.448	.000	1.000	1.000
a. Dependent Variable: INTENT							

Source: Authors' computation

Table 5 includes the results of testing the five hypotheses referring to the influence of entrepreneurial orientation dimensions on entrepreneurial intention. After analysing the results, it was found that only H5 was confirmed. Therefore, among all dimensions of entrepreneurial orientation, only passion significantly influences the entrepreneurial intention of female students from Cluj-Napoca. Moreover, 63,8% of the variation in entrepreneurial intention being determined by the variation in entrepreneurial orientation dimensions (R^2=0,638). These results are consistent with previous studies conducted among students that also identified that innovativeness (Law and Breznik, 2017), risk-taking (Koe, 2016; Robinson and Stubberud, 2014; Ekpe and Mat, 2012) and perseverance (Urban and Richard, 2015) do not significantly influence entrepreneurial intentions while passion has a positive influence on entrepreneurial intention (Anjun et al., 2021).

Table 7: The influence of entrepreneurial dimensions on entrepreneurial intention (multiple regression results)

	Unstandardized Coefficients		***Standardized Coefficients***			***Collinearity Statistics***	
	B	*Std. Error*	*Beta*	***t***	***Sig.***	*Tolerance*	*VIF*
(Constant)	-.045	.406		-.111	.911		
RISK	.123	.086	.092	1.436	.153	.395	2.529
INNOV	.068	.097	.047	.709	.479	.365	2.739
PROAC	.132	.087	.084	1.508	.133	.517	1.935
PAS	.708	.055	.686	12.907	**.000**	.570	1.754
PERS	-.053	.089	-.034	-.599	.550	.489	2.046
a.Dependent Variable: INTENT							

Source: Authors' computation

As results presented in **table 6** show, H7 was confirmed. This means that crisis significantly influences the entrepreneurial orientation of female students of Cluj-Napoca, but explains its variance in a very small percentage (R Square=0.054) this meaning that there are other external factors that influence the EO of female students. This is consistent with previous research that identified as influencing factors age, work experience, family background (Arrighetti et al., 2016), and education (Nitu-Antonie and Feder, 2015).

Table 8: Crisis influence on entrepreneurial orientation (linear regression results)

	Unstandardized Coefficients		***Standardized Coefficients***		
	B	*Std. Error*	*Beta*	***t***	***Sig.***
(Constant)	4.380	.242		18.128	.000
Crisis	.188	.052	.231	3.601	.000
a. Dependent Variable: OE					

Source: Authors' computation

Our research provides nuanced results regarding the tested hypotheses. **Table 7** provides a concise overview of the hypotheses examined in our study, along with their corresponding outcomes based on the linear and multiple regression analyses.

Table 7: Summary of the hypotheses testing results

Hypotheses	Results
H1: EO→EI	**Supported**
H2:INNOV→EI	Rejected
H3:RISK→EI	Rejected
H4:PROAC→EI	Rejected
H5:PAS→EI	**Supported**
H6:PERS→EI	Rejected
H7:CRISIS→EO	**Supported**

Source: Authors' computation

5. Conclusions

Entrepreneurship plays an essential role in the development of a healthy economy. Thus, the study of the factors that positively influence entrepreneurship is very important. This study contributes to entrepreneurship research by answering the call for testing new dimensions of individual entrepreneurial orientation by investigating two newly proposed dimensions: passion and perseverance. Also, our study contributes to gender studies by investigating the factors that influence the entrepreneurial intentions of young females in an effort to propose tailored solutions that would enhance their engagement in entrepreneurship. Given the fact that research on these topics in Romania is scarce, we consider that this study offers some insight on the entrepreneurial orientation of young females from Cluj-Napoca. The study of the entrepreneurial orientation of women during their studies is important as students represent an important pool of potential entrepreneurs and because it can offer guidance for educators, policymakers, and support networks aiming to foster entrepreneurship among women.

The first aim of this research was to identify the entrepreneurial orientation of female students from Cluj-Napoca and whether it positively influences their entrepreneurial intentions. As expected, we found a statistically significant influence of EO on EI, consistent with the findings of previous studies. Among the five dimensions of entrepreneurial orientation, namely risk-taking, innovativeness, proactiveness, passion, and perseverance, the results of our regression analysis have revealed that only passion has a significant impact on entrepreneurial intention. This finding underscores the significance of passion as a crucial element in the entrepreneurial intention of female students. From a theoretical perspective, it aligns with previous research that has highlighted the central role of passion in entrepreneurship. Passionate individuals are more likely to pursue entrepreneurial opportunities with determination and enthusiasm, which can lead to the formation of entrepreneurial intentions. While entrepreneurship has traditionally been dominated by males, our findings suggest that passion could be a particularly important driver for female students for considering entrepreneurship as a career path. This highlights the importance of studying entrepreneurship from a gender perspective and tailoring entrepreneurship education and support programs to address the unique needs and motivations of female entrepreneurs.

The second purpose of this study was to investigate the influence of a context of crisis on EO. Our regression analysis indicates that these students' entrepreneurial orientation is significantly and positively influenced by their perception of how the crisis will impact their future entrepreneurial careers. In times of crisis, individuals may become more attuned to opportunities for innovation and problem-solving and assume the risk to pursue their entrepreneurial intentions. Encouraging entrepreneurship, particularly among female students, during times of crisis can contribute to economic recovery and growth. Supportive

policies, such as grants, incubators, and tax incentives, can be tailored to address the specific needs of young female entrepreneurs in these circumstances.
Educational institutions and policymakers can use these findings to design more effective entrepreneurship education programs for female students. Educators should explore innovative approaches to fostering passion among their students. Students should be encouraged to explore their interests and align their entrepreneurial endeavours with their passions as this can increase their commitment to entrepreneurial pursuits. When designing policies and initiatives aimed at promoting entrepreneurship among women, governments should consider the importance of passion. These policies could include financial incentives, access to resources, and networking opportunities that facilitate the pursuit of entrepreneurial passions. The stories of successful female entrepreneurs who credit their success to their persistent passion for their ventures should be promoted by all organizations (public or private) that have a mission in promoting and supporting female entrepreneurship.
An important limitation of the current study relates to generalizability, given that it was focused only on a small sample of female students from Cluj-Napoca, Romania. The regional context of an Eastern European country may play a significant role in explaining the observed results. Cultural factors, societal norms, and economic conditions in this region could potentially influence the way female students perceive and pursue entrepreneurial opportunities. Future research could delve deeper into the cultural and contextual factors that may contribute to this unique pattern by investigating a larger group of students from different Western and Eastern European countries.
Our study provides a snapshot of the relationship between entrepreneurial orientation and intention among female students. Longitudinal research designs could provide insights into how these relationships evolve over time. It would be valuable to follow a cohort of female students as they progress through their academic and professional journeys to observe how their entrepreneurial intentions develop and whether passion remains a dominant influence. Moreover, future research should investigate the drivers of entrepreneurial intention on larger samples of other female categories such as employees, females with lower education levels, living in less economically developed regions as they have more difficulties in finding jobs and entrepreneurship could be a solution to generate income, achieve financial independence, and contribute to household and community prosperity.

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Bio-notes

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BOARD CHARACTERISTICS AND CORPORATE PERFORMANCE: EVIDENCE FROM THE NIGERIAN OIL AND GAS COMPANIES

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Abstract: *This study investigated how board characteristics such as board size (BOSI), board independence (BOID), board gender diversity (BOGD), and board meeting (BOMT) impact the performance of the Nigerian oil and gas sector. Seven oil and gas firms were randomly selected, and data collected on the relevant variables for ten (10) years. Data were descriptively analysed using mean, standard deviation, skewness, and kurtosis, while a panel data model was used as the estimation technique. The study found that BOSI, BOID, and BOGD positively and significantly impact the performance of oil and gas firms in the country. Though the relationship between BOMT and the performance of oil and gas firms is positive, it was not statistically significant. It is, therefore, concluded that critical attention should be paid to board characteristics as they play critical role in monitoring the company's management, establishing strategic direction, and protecting the interests of shareholders and stakeholders. This study recommends that oil and gas firms maintain stipulated number of independent directors that could help sustain positive and significant association between board independence and performance of the sector.*

Keywords: Board size, Board independence, Board gender diversity, Board meeting, Oil and gas firms

JEL Classification: G3, G34, G340.

1. Introduction

Trust and openness are essential for a company's efficient operations and growth. To keep a business running smoothly, shareholders must build confidence in the management, who must be honest, transparent, credible, dependable, and accountable in carrying out their duties and striving for excellent performance. Following significant scandals such as Enron and Worldcom, it became clear that empirical investigation is needed to establish the

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characteristics of boards that influence corporate performance. For example, one of the prominent business scandals is the Enron case. Enron, a renowned American energy and commodities firm, declared bankruptcy in 2001 as a result of accounting fraud and unethical business practices. Enron's top management used complex financial arrangements, unreported off-balance-sheet firms, and other misleading practices to artificially raise revenues while concealing financial obligations (Liu, Lu and Wu, 2021). Baker (2003), and Petra and Spieler (2020) observed that the company's senior executives also forced workers to buy in the company’s stock while selling their own, resulting in large personal profits. The deception was revealed in 2001, when Enron's stock price collapsed, prompting investigations by the US Securities and Exchange Commission (SEC) and the Department of Justice. These investigations revealed a persistent culture of dishonesty and deception in which senior executives profited while investors, employees, and other stakeholders suffered losses. The Enron crisis sparked a wave of corporate governance and accounting changes aimed at increasing accountability and transparency in business operations and reporting.

The case of unethical practices is not limited to organisations in developed economies. Some organisations in Nigeria and other developing countries are not exempted from corrupt unethical practices perpetrated by management. A critical example is the Nigerian oil and gas sector. The sector accounts for a sizable share of government income and foreign exchange gains. In the fourth quarter of 2022, the oil and gas sector contributed 4.3% to the GDP of Nigeria (Okonkwo, 2023). However, the sector continues to confront obstacles like corruption, environmental concerns, security worries, and the need for diversification. Various Nigerian administrations have recognized the need to combat corruption in the sector over the years and have made attempts to implement reforms and anti-corruption measures. However, the issue is complicated and deeply rooted, necessitating concerted efforts from both the government and other stakeholders to successfully address it and promote transparency, accountability, and good governance in the sector.

The Enron case and the experience in the Nigerian oil and gas sector emphasize the need for robust corporate governance systems in empowering boards of directors and appropriate committees to protect shareholders' and other stakeholders' interests and investments from exploitation by unscrupulous CEOs and their management teams (Mardnly, et al., 2018; Salehi, Arianpoor and Dalwai, 2020). Good corporate governance is critical for safeguarding investors, strengthening and stabilizing the capital market, and improving firm performance, which attracts investments. According to Naciti (2019), the board of directors provides leadership, supervision, and oversight of senior management's actions in order to preserve the interests of a company's shareholders. Previous studies have found that specific board characteristics such as board size, board independence, board gender diversity, and board meeting are important in the board's function of overseeing CEOs and engaging in organizational activities (Agyei-Mensah, 2021; Aifuwa and Embele, 2019; Rajeevan and Ajward, 2020). Achieving balance among various board characteristics, such as BOSI, BOID, BOGD, and BOMT, is critical in cultivating transparency, upholding integrity, and ensuring accountability in information dissemination. Furthermore, it contributes to improving the organization's performance for the benefit of shareholders and other stakeholders (Buertey, 2021).

The majority of research in Nigeria on board characteristics and their influence on performance are conducted in the banking, insurance, and manufacturing sectors (Adekunle and Aghedo, 2014; Akpan and Amran, 2014; Ehugbo, 2021; Samuel and Edogbanya, 2022). More empirical study is needed to investigate the impact of board characteristics on the performance of Nigerian oil and gas firms. This study sought to fill this knowledge gap by conducting empirical investigation into how characteristics such as BOSI, BOID, BOGD, and BOMT impact the performance of Nigerian oil and gas firms.

2. Literature Review and Hypotheses Development

Nigeria's oil and gas sector plays a critical role in the country's economy. It contributes significantly to gross domestic product, government income, and foreign exchange profits. Nigeria, one of Africa's biggest oil producers, is among the top ten nations in the world in terms of estimated reserves. Furthermore, through its vast value chains, the sector creates enormous jobs directly and indirectly for Nigerian people and others. However, the sector confronts a number of obstacles that are impeding its growth. These include unethical management practices that harm other stakeholders, poor performance, and inefficient service delivery (Muazu, 2019). Lack of transparency is the major challenge facing the sector, making holding companies and government officials responsible for their activities difficult. Furthermore, the regulatory structure in the industry is weak and disconnected, resulting in insufficient enforcement of rules and regulations. Establishing various regulatory organizations with overlapping functions produces regulatory gaps and discrepancies. These governance issues have the potential to destabilize the industry and diminish investors' and other stakeholders' trust in its functioning. This research intends to address these concerns by investigating and suggesting appropriate board qualities that could improve the sector's efficiency and reputation.

Corporate performance can be measured using different dimensions such as return on asset, return on equity, Tobin's Q, market-to-book value (MBV), and so on. In this study, return on asset is selected to proxy corporate performance. Return on asset is a flexible financial indicator that provides an overview of a company's profitability and asset usage (Samuel, and Edogbanya, 2022). It assists stakeholders in making informed decisions, identifying areas for development, and evaluating a company's overall financial health and performance. ROA represents a ratio of the returns on the assets of a corporation or the ratio of earnings to average total assets. The higher the value of ROA, the greater the company's profitability. Only firms in the same industry should be compared using this ratio. This is because certain companies in other sectors may not be asset-sensitive, which means they do not require as many expensive facilities and equipment to create revenue for their operations as others, thereby making their ROA smaller than that of asset-sensitive firms. This explains the rationale for focusing only on the oil and gas sector.

Board attributes or characteristics are a vital instrument of governance. They encompass all the features that distinguish boards. Some of the board characteristics investigated in this study include BOSI, BOID, BOGD, and BOMT.

Board size refers to the total number of members on the board who are either executive or non-executive directors (Eguavoen, Ukarin and Enewerome, 2023). The quantity and the wealth of experience of directors in a corporation have a substantial impact on the board's effectiveness. As a result, determining the optimal board size for a company is critical. A bigger board size reduces the risk of conflicts of interest and helps to address the agency problem (Yakob and Abu Hasan, 2021). This is especially true during times of financial instability or crisis. However, the absence of diversity on smaller boards increases the agency issue and decreases performance by making strategic decisions more difficult. As a result, it is hypothesized that: *H_{01}: Board size has no significant influence on the performance of Nigeria's oil and gas sector.*

According to Jouirou and Mohamed (2014), board independence may be calculated as the percentage of outside directors to the total number of directors on the board. A firm's inside directors are those who have had or presently hold executive positions inside the company, whereas outer directors are those who do not hold such positions. Weir and Laing (2003) opine that more board independence improves the efficacy and efficiency of corporate management monitoring. Furthermore, organizations with a higher share of non-executive board members have the ability to maintain regulatory compliance and simplify the disclosure of the firm's financial status (Samaha, Dahawy, Hussainey, and Stapleton, 2012).

H_{02}: Board independence has no significant influence on the performance of Nigeria's oil and gas sector.

Board gender diversity in boardrooms is a contentious subject in corporate governance. Gender diversity requires the presence of women on boards (Dutta and Bose, 2006). According to Ekadah and Mboya (2012), board gender diversity refers to the presence of female directors in the boardroom. Historically, men CEOs predominated in boardrooms. A board with a substantial female membership has the capacity to efficiently balance the concerns of numerous stakeholders, including workers, consumers, suppliers, and communities, while also taking into account shareholders' performance-oriented objectives (Beji, Yousfi, Loukil, and Omri, 2021).

H_{03}: Board gender diversity has no significant influence on the performance of Nigeria's oil and gas sector.

Board meeting is the number or frequency of meetings by board members (Barros and Sarmento, 2020). Convening board meetings may improve the board's efficiency and build unity among its members by keeping all board members up to date on the company's success. The frequency of these meetings acts as a barometer for gauging board involvement and oversight effectiveness. Increased board meeting frequency has the ability to improve managerial supervision and control.

H_{04}: Board meeting has no significant influence on the performance of Nigeria's oil and gas sector.

3. Methodology

This study investigated how board characteristics affect the performance of the oil and gas sector in Nigeria. We used a combination of cross-sectional and longitudinal study approaches to extensively examine the different correlations among the variables. These designs allow us to investigate numerous factors across time rather than just at one point in time. We randomly selected seven oil and gas firms and collected data on the indicated factors from 2012 to 2021. The information taken from the annual reports of these selected oil and gas firms served as the major data source. These yearly reports were obtained electronically from the websites of each firm. Data extracted directly from published yearly reports have a substantial benefit in terms of authenticity and trustworthiness. As a result, the data gathered and processed in this study is regarded as legitimate and reliable. Descriptive statistical tools like skewness, kurtosis, mean, and standard deviation were employed in this study to illustrate the key aspects of the research data. Multivariate regression analysis was employed for this investigation. This strategy is based on the premise that the variables of interest have a linear relationship. The research models were estimated using a panel regression model. Three separate techniques were estimated: pooled (OLS), fixed effects (FE), and random effects (RE). The basic assumption of pooled OLS model is that there are constant coefficients across entities and time. This makes it appropriate when there is no systematic variation that differentiates entities or time periods. The fixed effect model highlights how time-invariant unobserved heterogeneity is controlled at the entity or cross sectional level. FE presupposes that the unobserved factors do not demonstrate correlation with the explanatory variables. The random effects (RE) model allows for time-invariant unobserved heterogeneity. However, it assumes that the unobserved factors are uncorrelated with the explanatory variables and have a constant variance over time. The outcome of the Hausman cross-sectional test was used to choose the most appropriate model (fixed effect model) to test the research hypotheses and draw conclusions.

4. Results and Discussions

This section contains the analyses of the data collected as well as the presentation and interpretation of the results. The findings of the study were also discussed in this section.

Table 1: Descriptive statistics of variables

Statistics	ROA	BOSI	BOID (%)	BOGD	BOMT
Mean	2.786	8.300	64.962	12.636	4.457
Median	3.130	8.000	66.670	12.500	4.000
Maximum	176.270	14.000	90.000	17. 330	7.000
Minimum	-71.360	4.000	40.000	0.000	2.000
Std. Dev.	25.166	2.088	12.660	9.265	0.912
Skewness	4.155	0.203	-0.193	0.179	1.052
Kurtosis	34.764	2.865	2.342	2.301	4.447
Jarque-Bera	3144.271	0.534	1.698	1.796	19.016
Probability	0.000	0.766	0.428	0.407	0.000
Observations	70	70	70	70	70

Source: Authors' computation (2024)

The mean and standard deviation for corporate performance proxied by return on asset (ROA) are 2.786 and 25.166 respectively. The mean and standard deviation of board characteristics such as BOSI, BOID, BOGD and BOMT of the seven oil and gas firms are 8.300 (2.088), 64.962% (12.660%), 12.636 (9.265), and 4.457 (0.912) respectively. Table 1 also revealed that the minimum and maximum values for ROA, BOSI, BOID, BOGD and BOMT for the seven firms are -71.360 (176.270), 4 (14), 12.66% (90%), 0 (17.330), and 2 (7) respectively. The Jarque-bera statistic and probability values for ROA, BOSI, BOID, BOGD and BOMT are 3144.271 (0.000), 0.534 (0.766), 1.698 (0.428), 1.796 (0.407), and 19.016 (0.0000) showed that the data are normally distributed except for ROA and board meeting (BOMT) that have p-values of less than 5%.

Table 2: Unit root test for variables

Variables	Levin, Lin and Chu Test				Integration	Remark
	Levels (Statistic)	Prob	First Difference	Prob		
Return on Asset (ROA)	-0.1564	0.4379	-6.9715	0.0000	I[1]	Stationary
Board size (BOSI)	0.0656	0.5262	-2.5182	0.0065	I[1]	Stationary
Board Independence (BOID)	-0.0900	0.4641	-2.6749	0.0037	I[1]	Stationary
Board Gender Diversity (BOGD)	-1.0234	0.1531	2.7939	0.0028	I[1]	Stationary
Board Meeting (BOMT)	-0.6832	0.2473	5.7285	0.0000	I[1]	Stationary

Source: Authors' computation (2024)

The unit root test was used to examine the stationarity of the research variables used in regression analysis. The Levin, Lin, and Chu unit root test was employed in this study to determine the stationarity of the variables. The Levin et al (2002) unit root test is employed since it laid the groundwork for the panel unit root test. The results of the Levin, Lin, and Chu unit root test shows that all the variables ROA, BOSI, BOID, BOGD and BOMT are stationary at first difference (I[1]).

Table 3: Correlation coefficient

	ROA	BOSI	BOID	BOGD	BOMT
ROA	1.0000				
BOSI	0.0090	1.0000			
BOID	0.0004	0.1330	1.0000		
BOGD	0.0377	0.1809	0.2596	1.0000	
BOMT	0.0001	0.0868	0.0212	0.0832	1.0000

Source: Authors' computation (2024)

Table 3 shows the correlation coefficients as follows: ROA and BOSI (r = 0.0090), ROA and BOID (r = 0.0004), ROA and BOGD (r = 0.0377), and ROA and BOMT (r = 0.0001). The inter-correlation coefficients in Table 3 show that the correlation coefficients of all the variables are less than 0.8. This outcome supports the stipulation of Hair et al (2010)

Model Estimation and Interpretation

The nexus between board characteristics and the performance of oil and gas firms in Nigeria is empirically estimated using panel data model and results presented in Table 4 below:

Table 4: Estimated panel data model of the relationship between board characteristics and performance
Dependent Variable: ROA

Variable	Pooled OLS			Fixed Effect Model (FEM)			Random Effect (REM)		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
C	1.5311	1.7864	0.0800	9.3810	0.4545	0.6521	2.2389	1.5976	0.1163
BOSI	0.0344	0.4844	0.6302	0.3081	4.6931	0.0000	0.1989	3.7958	0.0004
BOID	0.0485	1.5277	0.1328	0.1438	2.4670	0.0182	0.0659	1.7855	0.0801
BOGD	0.0191	1.4462	0.1542	0.0589	2.4470	0.0191	0.0537	3.4201	0.0012
BOMT	0.2633	3.1771	0.0025	1.2094	0.5487	0.5864	0.1187	0.8784	0.3838
R-squared	0.2216			0.8579			0.3156		
Adjusted R-squared	0.1605			0.7943			0.2619		
F-statistic	3.6289			13.4966			5.8799		
Prob (F-statistic)	0.0111			0.0000			0.0006		
Durbin-Watson stat	0.9723			2.3888			1.5906		
No. Obs	70			70			70		

Source: Authors' computation (2024)

Table 4 shows the outcomes of the study, which comprises the results from the pooled ordinary least squares (OLS) model, FEM and REM. The pooled OLS model outcomes show that only BOMT have a statistically significant influence on ROA at the 5% level, whereas the other board characteristics (BOSI, BOID & BOGD) have no statistically significant impact on ROA. The R-squared value of the model is 0.2216, suggesting that the explanatory factors explain 22.16% of the changes in the dependent variable. Furthermore, the F-Statistic shows that the model is statistically significant at the 5% level, with a value of 3.6289 and a p-value of 0.0111.
The results of the FEM show that, with the exception of BOMT, all of the analyzed board characteristics have positive and statistically significant influence on return on assets (ROA) at the 5% significance level. The REM results, on the other hand, show that BOSI and BOGD are statistically significant at the 5% level, but BOID and BOMT are not statistically significant at the 5% level. Notably, all variables in this model have a positive relationship with return on assets (ROA). The results further showed that the fixed and random effect models have R-squared of 85.79% and 31.56% respectively. The Adjusted R-Square values of the fixed and random effect models are 79.43% and 26.19% respectively. The F-statistic of the fixed effect model is 13.4966 while that of random effect model is 5.8799 which are both significant at 5%.

Table 5: Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	15.22203	4	0.0043

Source: Authors' computation (2024)

The Hausman cross-sectional test was used to choose the most appropriate model to test the research hypotheses and draw conclusions. The p-value of the test is less than 5% (p-value = 0.0043), showing that the FEM is more appropriate than the REM, as shown in Table 5. As a result, for hypothesis testing, we depend on the results of the FEM.
The FEM results show that BOSI (β = 0.3081; t = 4.6931; p = 0.000), BOID (β = 0.1438; t = 2.4670; p = 0.0182), and BOGD (β = 0.0589; t = 2.4470; p = 0.0191) all have positive and statistically significant effects on the performance of firms in the Nigerian oil and gas sector. BOMT (β = 1.2094; t = 0.5487; p = 0.5864), on the other hand, had no significant effect on the performance oil and gas firms in Nigeria. Therefore, the null hypothesis four is not rejected.

Discussion of Findings

Firstly, this study revealed that the board size does significantly impact the performance of the Nigerian oil and gas firms. This outcome is consistent with the finding of Eguavoen, Ukarin and Enewerome (2023) on the positive and significant impact of board size on firm performance. This implies that the size of the board can increase the performance of a firm. This is because a large board may be more effective in providing diverse viewpoints on issues, conducting effective oversight, and participating in strategic issues based on their abilities and expertise. It is important to note that a large board if not well-managed, may result in more disagreements, coordination concerns, and communication difficulties that could obstruct the optimal performance of the firms.
Secondly, it was found that board independence shows a positive and significant influence on the performance of oil and gas firms in Nigeria. This outcome further demonstrates the importance of the involvement of independent directors on a board of directors which could assist separate a company's management and control duties. Furthermore, independent directors have larger and more comprehensive involvement with broader groups of

stakeholders (Gardazi, Hassan and Johari, 2020) and a broader viewpoint, which is likely to result in increased exposure to performance criteria. As argued by Samaha et al. (2012), companies' boards that are dominated with a greater number of non-executive board members could promote compliance with legislative authority regulations and allow disclosure of the firm's financial status.
Thirdly, board gender diversity was found to positively and significantly influence the performance of the Nigerian oil and gas firms. This finding is supported by finding of Dezso and Ross (2012) that having more women on executive boards increased the performance of the company. Furthermore, Bart and McQueen (2013) demonstrated that female board members could accomplish significant achievements than male board members. Companies with diverse boards perform better because of having diverse perspectives and experiences which could assist in decision-making. A more diversified representation of perspectives and opinions can lead to more innovative and creative solutions to organizational difficulties. Increased board diversity can improve corporate image and appeal to customers, investors, and other stakeholders. Female board members frequently bring a distinct skill set and a new perspective to issues that male board members may overlook.
Finally, board meeting does not demonstrate any significant influence the performance of the Nigeria oil and gas firms. This outcome contradicts a prior expectation. Board meetings are expected to play an essential role in contributing to enhanced corporate performance in a variety of ways. This is because directors have the capacity to discuss and make decisions on a number of problems that may influence the company's financial and strategic objectives at board meetings (Al Farooque et al., 2020). Board meetings should be held in a way that encourages open and constructive dialogue among board members in order to achieve improved decision-making and a more effective oversight management team.

5. Conclusion and Recommendations

The oil and gas sector contributes significantly to government revenue and foreign exchange earnings in Nigeria. Statistics show that the sector generated 4.34% of total GDP in the fourth quarter of 2022. Despite the contribution of the sector, it continues to face challenges such as corruption, environmental problems, security concerns, and the need for effective board management. These challenges are acknowledged to be multifaceted and deeply established, demanding collaborative efforts from both the government and other stakeholders to solve them and promote transparency, accountability, and good governance in the sector. This study contributes to knowledge by providing industry-specific insights into the relationship between board characteristics and corporate performance using the Nigerian oil and gas sector. It provides an empirically based and robust understanding of governance dynamics within the oil and gas sector in Nigeria.
The size of an oil and gas company's board of directors can impact its decision-making process and corporate governance. Therefore, a diverse board of directors with a wide range of talents, experiences, and backgrounds should be maintained to provide new insights and improved decision-making that could lead to better risk management, strategic planning, and innovation. This study recommends that oil and gas companies maintain a certain number of independent directors in order to maintain a favourable and substantial relationship between board independence and sector performance. Furthermore, in order to maximize the benefits of having a sufficient number of independent directors, their performance should be examined on a regular basis in order to advise in keeping the efficient ones and dismissing those performing below expectations. It is also suggested that additional provision be made for women or females to actively participate on oil and gas firm boards and in decision-making processes. This is due to women's or females' strong attention to detail, connections, position, abilities, and knowledge, all of which may improve performance.

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ASSESING ROMANIAN FARMERS' MOTIVATION FOR DIGITALIZATION: A UNIFIED THEORY OF ACCEPTANCE AND USAGE OF TECHNOLOGY (UTAUT) BASED RESEARCH MODEL

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Abstract: *The digital agriculture adoption strive by farmers could be assimilated with the adoption efforts of the computer technologies (ICT) by their respective users in other professional fields. Therefore, this paper proposes the adaptation of the Unified Theory of Acceptance and Usage of Technology (UTAUT) model to explore the motivations for the use of digital tools by field crop farmers in Romania. The history of TAM and UTAUT is explored as well as the usage of UTAUT2 and UTAUT3 in digital agriculture adoption studies globally. Furthermore, comparison is also made with other farmer studies based on a different research architecture conceived also to explore their motivations to use digital agriculture tools. The proposed model is building on the decades long research and validation of the UTAUT model, and it will be employed in subsequent quantitative studies to evaluate the Romanian farmers' motivations to embrace the digital agriculture technologies and practices. The paper is the outcome of the individual research done by the author and it was enhanced following academic debates and conference presentations. It is deemed to have a dual applicability, as a field tool for academic research but also provides guidance for companies developing digital tools for farmers in Romania and beyond.*

Keywords: Digital Agriculture/Agriculture 4.0, Technology Acceptance Models.

JEL classification: Q16, Q31, Q32, Q33, Q55.

1. Introduction

Digital agriculture is about using digital technologies for a more productive, more efficient, and less ecologically impactful farming. Earlier works (Markovits, 2022, 2023) using bibliometric maps support the description that digital agriculture, also known as Agriculture 4.0, is digitally enhanced (Bucci, Bentivoglio and Finco,, 2018) precision agriculture (ISPA, 2019) using industry 4.0 technologies such as: sensors, cloud computing and artificial intelligence (Braun, Colangelo and Steckel, 2018, Kamilaris, Karakoulis and Prenafeta-Boldu, 2017) with the intent to generate solutions for a smart/smarter farming: more productive, more efficient, more environmental friendly and less climate dependent.
The commonly held opinion in the reviewed literature on the topic (Abbasi, Martinez and Ahmad,2022, Albiero et al., 2020, Dayiloglu and Turker, 2021, Elijah et al., 2018, Goedde et al., 2020, Klerkx, Jakku and Labarthe,2019, Latino et al., 2021, Liakos et al., 2018, Roland Berger 2015, 2017, Saiz-Rubio and Rovira-Mas, 2020, Zambon et al., 2019, Zhai et al.,

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2020) is that, digital agriculture is a direct application of the recent innovations in sensor technology (e.g. multispectral cameras), digital image processing (e.g. satellite images), data analysis (big data, cloud computing, deep learning), data visualization as well as satellite positioning systems (e.g. GPS and RTK) using the connectivity offered by the Internet of Things (IOT) in the monitoring of crops, farm works management (sowing, treatments, irrigation, harvesting, inbound and outbound logistics) and administration of the farm assets such as: inputs (seeds, crop nutrition products, crop protection products, fuel), land, water, machine tool fleets.
Considering that all of the above can be done by using specialized software and very often with dedicated hardware we might consequently state that day to day activities in digital agriculture require the extensive use of Information and Computer Technologies (ICT). Therefore, knowing the levers that stimulate or inhibit usage of ICTs seems the right starting point in understanding the levers for usage and adoption of digital agriculture.
The literature that focused on the key barriers to the adoption of Agriculture 4.0 (Bucci, Bentivoglio and Finco, 2018, Pierpaoli et al., 2013, Tey and Brindal, 2012) revealed the following list of factors: cost, lack of technical skills, limited access to technology due to infrastructure or connectivity issues, resistance to change, concerns about data privacy and security.

2. Literature review

2.1 Models for Technology Acceptance (TAM/TAM2/UTAUT/UTAUT2/UTAUT3)

The extensive use of computer-based technologies in commerce, telecommunications, medicine, banking followed more recently by home entertainment, education and even smart homes justifies the decades long interest and accompanying research work in studying the drivers of technology acceptance and usage (Marikyan and Papagiannidis, 2023, Moon and Kim, 2001, Wang et al., 2021)
The earliest model, named the Technology Acceptance Model (TAM), was formulated by F.D. Davis while at the University of Michigan in 1989 (Davis, 1989) and sustained that perceived usefulness (PU) and perceived ease of use (PEOU) (see also Venkatesh and Davis, 1996) of a technology are the key determinants of user acceptance other words if a technology is perceived to be useful and easy to use then it is more probable to be adopted. Almost a decade later, Venkatesh and F.D. Davis extended the original TAM to the TAM2 (Venkatesh and Davis, 2000) by adding to the two original core constructs of TAM, perceived usefulness (PU) and perceived ease of use (PEOU), two additional factors: social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability).
In 2003, Venkatesh (University of Maryland), Morris (University of Virginia), G.B. Davis (University of Minnesota), and F.D. Davis (University of Arkansas) unified the factors influencing the acceptance and usage of technology in a model known as: The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). The new model combined eight prominent models at the time: Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), the Theory of Planned Behavior (TPB) (Ajzen, 1985), the Social Cognitive Theory (Bandura, 1986), the Technology Acceptance Model (TAM) (Davis, 1989), the Motivational Model (MM) (Davis, Bagozzi and Warshaw, 1989), the Model of PC Utilization (MPCU) (Thompson, Higgins and Howell, 1991), a model combining the Technology Acceptance Model and the Theory of Planned Behavior (Taylor and Todd, 1995) and the Innovation Diffusion Theory (DOI) (Rogers, 2003).
The UTAUT model proposed four key determinants of technology acceptance:

- *Performance Expectancy*: the belief that using a particular technology will augment job performance or make tasks easier to accomplish.

- *Effort Expectancy*: the belief that using a technology will be easy and requiring less effort.
- *Social Influence*: the influence of social factors such as colleagues, supervisors, and other social relationships as well as norms on the individual's decision to accept and use a technology.
- *Facilitating Conditions*: the perception that the necessary resources, support, and infrastructure are available to facilitate the use of the new technology.

UTAUT also considers that *gender, age, experience, and voluntariness of use*, could moderate the relationships between the four key determinants and technology acceptance.
In the validation process the eight individual models explained between 17 percent and 53 percent of the variance while the Unified Theory of Acceptance and Use of Technology (UTAUT) explained 77 percent of the variance in behavioral intention to use the technology and 52 percent of the variance in technology use (Venkatesh et al, 2016) thus outperforming the eight individual models. One of the main limitations of the model was that it was constructed to assess the behavior of employees in an organizational setting while non-organizational usage of technology was not studied. Arguably, consumers would behave differently vs employees.
In order to extend the validity of the model also for non-organizational settings (i.e., consumers) UTAUT2 was created as an extended version (Brown and Venkatesh, 2005) of the UTAUT model and included additional constructs such as “hedonic motivation”, “price value” and “habit” while removing “voluntariness” as moderating factor (Venkatesh, Thong and Xu, 2012). The new model considers that the use of technology by individuals in a non-organizational setting is also influenced by these three new constructs (hedonic motivation, price value, habit) and moderated by age, gender and experience. The “price value” construct is a valuable new addition as it accounts for the fact that unlike in the organizational setting in the case of consumers there is a cost for adopting the new behavior. This is also an important construct for our situation where farmers will most likely have to pay for at least part of the digital services, making UTAUT2 a better model to study farmers’ technology acceptance and usage in a business model that requires them to pay at least for part of the services rendered. A UTAUT2 questionnaire that includes the additional constructs could look like below:

1. *Performance Expectancy (PE)*
    - Using the technology enables me to accomplish tasks more quickly.
    - The technology enhances my effectiveness in performing tasks.
    - The technology improves my job performance.
2. *Effort Expectancy (EE)*
    - Learning to use the technology is easy for me.
    - I find the technology easy to use.
    - The technology is user-friendly.
3. *Social Influence (SI)*
    - People who influence my behavior think that I should use the technology.
    - People whose opinions I value think that I should use the technology.
    - People who are important to me think that I should use the technology.
4. *Facilitating Conditions (FC)*
    - The necessary technical support is available to me for using the technology.
    - I have the resources necessary to use the technology effectively.
    - The technology is compatible with other systems I use.
5. *Hedonic Motivation (HM)*
    - Using the technology is enjoyable for me.

- The technology provides me with a pleasurable experience.
- I find the technology fun to use.

6. *Price Value (PV)*
    - The benefits of using the technology justify its cost.
    - The technology offers good value for the money.
    - The cost of using the technology is reasonable.
7. *Behavioral Intention to Use (BIU)*
    - I intend to use the technology in the near future.
    - I plan to use the technology regularly.
    - I expect that I will use the technology frequently.
8. *Use Behavior (UB)*
    - I currently use the technology.
    - I have used the technology in the past.
    - I use the technology on a regular basis.

The history to date of technology acceptance models also includes the amendment of the UTAUT2 (Dwivedi et al., 2019) where “attitude” partially mediates the effects of performance expectancy, effort expectancy, facilitating conditions and social influence on behavioral intent as well as a direct effect on usage behavior.

UTAUT3 (Farooq et al., 2017) is characterized by the introduction of the “personal innovativeness” construct. However, The Web of Science search for “UTAUT3” materials yielded only 5 articles, 2 related to payments (Chen et al., 2019, Saha and Kiran, 2022) and 3 related to education (Tiwari et al., 2022, Gupta, Mathur and Narang , 2022, Gunasinghe et al., 2020) suggesting a relatively small number of use cases.

One of the most important UTAUT2 extensions present in the literature is the one done to assess the willingness to pay for agricultural IoT by Shi and his team (Shi et al., 2022). They examined the factors influencing the willingness to adopt and pay for the Internet of Things (IoT) in the agricultural sector, by interviewing 345 farmers (premium fruit growers) from the northern districts of Bangladesh. The used model emulated the UTAUT 2 from which Habit (HB) was eliminated and new constructs were added: Trust (TT), Government Support (GS) and Willingness To Pay (WTP). The Structural Equation Modeling confirmed that effort expectancy (EE), performance expectancy (PE), facilitating condition (FC), price value (PV), personal innovativeness (PI), hedonic motivation (HM), government support (GS),and trust (TT) influence the willingness of Bangladeshi farmers to adopt the IoT(WTA), that in turn determines the willingness to pay (WTP). The study also revealed that the willingness to adopt (WTA) moderates the association between performance expectancy (PE), price value (PV), and willingness to pay for the IoT (WTP):

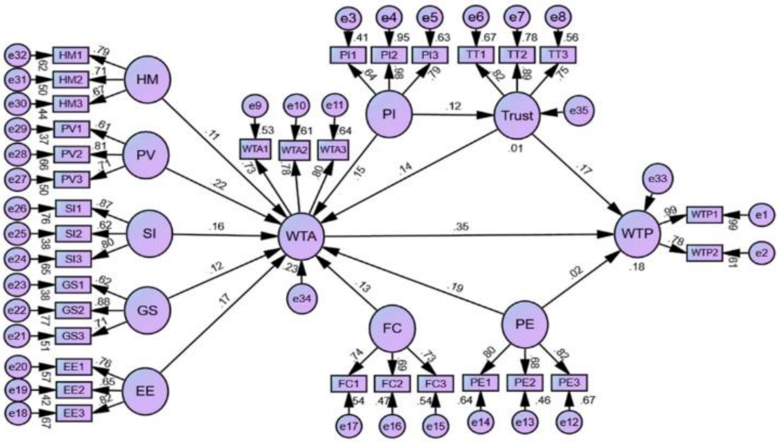

Figure 1. PLS-SEM model
Source: Shi et al., 2022

It is a rather novel and rare study about the behavior of rural customers with respect to innovation adoption (IoT in agriculture) indicating precise reasons for the voluntary adoption of the IoT in agriculture (WTA) and willingness to pay for it (WTP).

2.2 The Uptake and Usage Theory

Rose and his colleagues (Rose et al., 2016), implemented a mixed learning plot among British farmers comprising a baseline survey with 244 face to face quantitative interviews with farmers, a number of 78 semi-structured interviews with farmers and advisers as well as a one day workshop with 39 researchers, policy makers and decision support application manufacturers. The aim of this research was to understand what factors would favor the adoption of agricultural decision support systems both by farmers and their advisers. Decision support systems are a subset of all the digital agricultural tools that could be used in a farm and enable decision making in the farm thus representing a core enabler of decision making conducive to more productive, more efficient, more environmentally friendly and less weather dependent farming. 15 factors that influence the adoption and usage of agricultural digital decision support systems were identified in this study. The resulting model was named The Uptake Model, and it affirms that usability, cost-effectiveness, performance, relevance to user, and compatibility with compliance demands are the motivations that would persuade a farmer to adopt a certain decision support system. Age, type of farming, digital literacy level and size (scale) of farm are positive or negative moderators (named modifiers in the study) while the intensity of the promotional activity and the ability to facilitate the possibility to solve any compliance needs for the farmers will augment the probability of adoption as shown below:

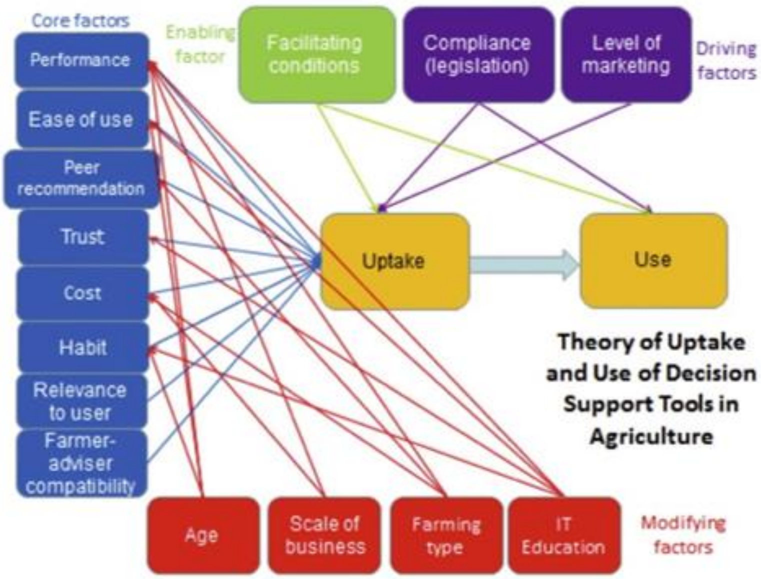

Figure 2. The Decision Support Tools in Agriculture Uptake and Usage Model
Source: Rose et al, 2016

The resulted model had a very strong resemblance in both the constructs identified as well as their inter-relationships to the UTAUT2 model. The behavioral intent to use a specific decision support tool is influenced by performance expectancy, ease of use, peer recommendation, trust, cost, habit, relevance to user, farmer-adviser compatibility, while age, scale of farming, farming type, IT education, amplify or inhibit the strength of the above mentioned factors. Behavioral intent has a direct effect on uptake (as defined by them, adoption in the spirit of this paper). The internet signal, compatibility with existing systems, fit within the workflow of the end user are identified as enabling factors. A novelty and source of strength for this model is the finding that compliance (helping a farmer or adviser to satisfy legislative or market requirements) and level of marketing have a determining influence on uptake.
It is noteworthy to remark that in the discussion part of the article the authors draw a direct similarity line with the UTAUT2 model (Venkatesh, Thong and Xu, 2012).

2.3 The Romanian context

One specificity of the Romanian field crops professional agriculture is the fact that farms tend to be overwhelmingly family businesses with an atomized structure of plots. In the author's practitioner experience very often farms of above 400 hectares are spread over several tens of plots sometimes situated within a radius of 25 to 30 kilometers. These businesses are building their operational and economic scale through the exploitation of family's owned land but also exploiting rented arable land. Land exploitation is seldom done in organized cooperatives (Dumitru, Micu and Sterie, 2023) although subsidies accessibility and realization of the potential to create a common purchasing power could stimulate the reinvigoration of cooperatives.
Another important specificity of the Romanian agricultural landscape, that might have an impact on the digitalization adoption rate in farms, is that very often the inspired entrepreneur, the founding figure of the business, would still be involved in the day-to-day

operation of the farm. Most often a he who is nowadays aged 55+ or even 60+ (Rovný, 2016) who brings in his own way of dealing with innovation (Motoc, 2022). The rising generation of professional farmers is more digital savvy, coming either from the younger inheritors or the hired professionals, and thus there is a strong likelihood that they would be more inclined to use digital tools in managing the farm (Motoc, 2022).
While admitting the progress and gains likely to result from the adoption of digital agriculture, it remains a rather complex and multifaceted cross generational learning process (Balan et al. 2019, Bratianu, Stanescu and Mocanu, 2021, Gerli et al., 2022, Medvedev and Molodyakov, 2019).
The stride towards digital farming practices and technologies in its core is also very much a knowledge management process within farms. Besides the technological changes (acquisition, installing, calibration, exploitation of technology), the new digital practices imply knowledge acquisition, organizing, storing, retrieving, as well as sharing an organization's knowledge assets to facilitate decision-making, problem-solving, learning, and innovation (Bratianu, 2002, 2018, 2022). Furthermore, it is important to highlight and consider the fact that moving from a traditional way of managing the farm to a way aided by the 4.0 tools it also represents a move from tacit (habitual way of doing things) to an explicit and rational way of managing and deciding in the family farm (Bratianu and Motoc, 2022), thus showcasing the knowledge transformation processes from spiritual and emotional knowledge to rational knowledge as explained by the knowledge fields theory (Bratianu and Bejinaru, 2023).
A Web of Science search for "digital agriculture" materials and Romania, yielded a corpus of 59 articles with were mapped for the minimum co-occurrence of keywords: 2 occurrences. Out of a total of 309 keywords, 36 keywords respected that and generated 5 clusters as shown in Figure 3:

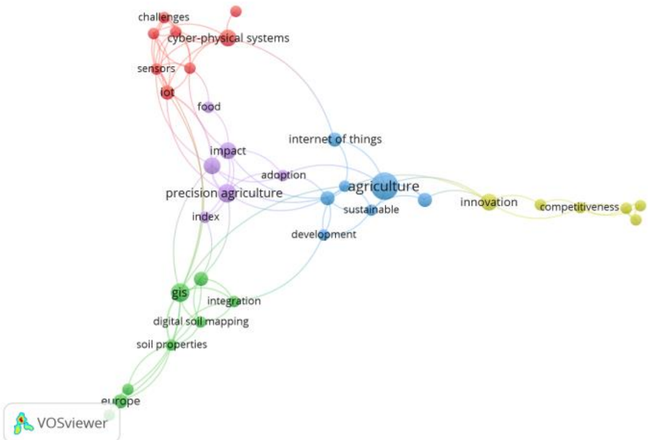

Figure 3. The keywords map of materials containing "digital agriculture" originating from Romania at 2+ co-occurrences
Source: WoS,December 17, 2023

In this corpus of articles Zeca's report stands out (Zeca, 2021). It presents the results of a national survey done at the beginning of 2021 about the Romanian farm managers' fears and expectations from the implementation of smart technologies. However, it is a rather descriptive research that does not construct a model.

3. Methodology

Online libraries and article repositories (Web of Science, Scopus, Taylor and Francis, Google Scholar), consulting firm reports (Goedde et al., 2020, Roland Berger 2015,2019) as well as references used in the doctoral school classes (Bratianu, 2022, Pînzaru, Anghel and Mihalcea, 2017, Pinzaru, Zbuchea and Vitelar, 2019, Pinzaru et al., 2022) as well as thematic and author searches on Research Gate (social network for scientists and researchers) were used to enrich the literature review for the above-mentioned keywords and concepts with focus on barriers to adopting digital agriculture and tools to measure factors influencing adoption rates.

4. Results and discussion

To better understand the scope of the relevant literature a query of the Web of Science (WoS) database was done using the key words “digital agriculture”, and “adoption”. A corpus of 630 materials were extracted having a total number of 2558 authors that used 3272 author keywords.
These were mapped using VOSviewer (*van Eck and Waltman, 2010*) version 1.6.19 (released on January 23rd, 2023) for 10+ co-occurrences (see figure 3) and resulted 76 key words distributed in 4 clusters as follows: adoption models (32items), agriculture 4.0 (28 items) , digital agriculture (11 items) and systems (5 items).
To further stimulate the thematic clustering of these materials, the co-occurrence criteria was raised to 15+ co-occurrences and resulted also a four clusters structure. Noteworthy, the new maps generated at this level of co-occurrence (see figure 4) reveal the centrality of the UTAUT2, Information and Computer Technology, Adoption and Acceptance.

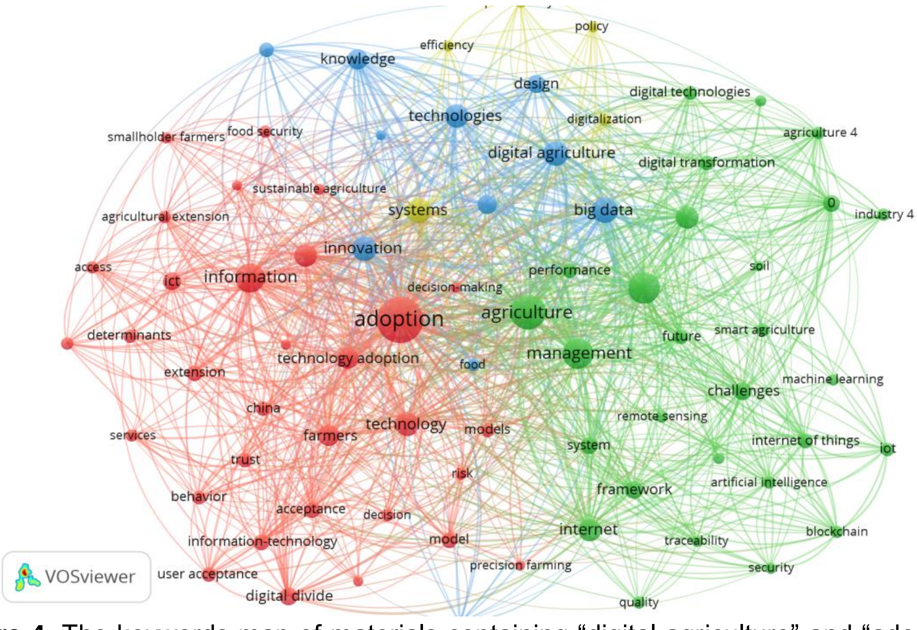

Figure 4. The keywords map of materials containing “digital agriculture” and “adoption” at 10+ co-occurrences
Source: WoS, July 2nd, 2023

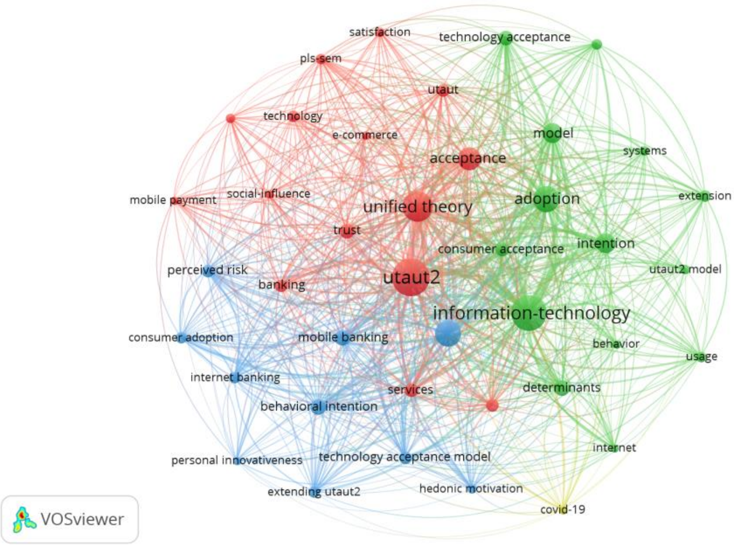

Figure 5. The keywords map of materials containing “digital agriculture” and “adoption” at 15+ co-occurrences.
Source: WoS, July2nd, 2023

Following the recommendation of the UTAUT author (Venkatesh et al., 2016) the UTAUT2 core model could be extended to fit the purpose of this study. The newly proposed model is constructed using the comparative table below:

Table 1: The unified model proposal (Author’s proposal)

Venkatesh, Thong and Xu, 2016	Shi et al., 2022	Rose et al., 2016	Proposed Model
Perform. Expectancy	Perform. expectancy	Performance	Yes
Effort Expectancy	Effort expectancy	Ease of Use	Yes
Social influence	Social Influence	Peer recommendation	Yes
	Trust	Trust	Yes
Price Value	Price Value	Cost	Yes
Habit		Habit	Yes
		Relevance to user	No
		Farmer-adviser compatibility	No
		Age	Yes
		Scale of business	Yes
		Farming type	No
		IT education	Yes
Facilitating Conditions	Facilitating Condition	Facilitating Conditions	Yes
		Compliance	Yes
		Level of marketing	No
Behavioral Intent	Willingness to Adopt	Uptake	Yes

Hedonic Motivation	Hedonic Motivation		No
	Pers. Innovativeness		Yes
	Government support		No
New Conception of Acceptance and Use	Willingness to Pay	Usage	Yes

Source: Author's elaboration

Because the adoption of digital agricultural tools is mainly for professional usage it is deemed acceptable to eliminate from the model the Hedonic Motivation (HM) factor. The farming type is also considered a non-variable as explorations are to be done in homogeneous groups of farmers, practicing similar farming types. All the other eliminated factors are also deemed to play a minor role in the Romanian context (marketing level, the farmer adviser compatibility, government support as phrased in Shi et al., 2022) and thus could be eliminated making the model easier to apply.
Consequently, the proposed model would be emulating an extended UTAUT2 model following the below conceptual framework:

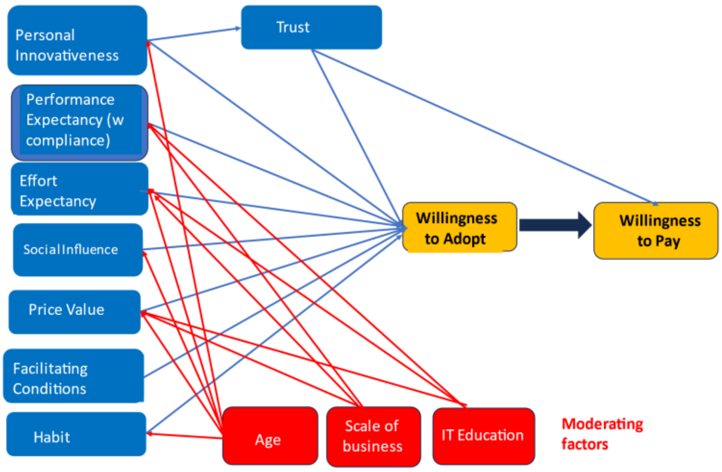

Figure 6. Proposed conceptual model
Source: Author's proposal

5. Conclusion

As proven across time, through its genesis and evolution the UTAUT model (Venkatesh et al, 2016) is a solid model (*Tamilmani et al., 2021*) that could be used in a research project that aims to understand the motivations of Romanian field crop farmers (arable farming) to adopt digital agriculture technologies and practices and even explore their willingness to pay for these services.
The intent is to use this model in a subsequent quantitative measurement of Romanian farmers motivations to embrace Agriculture 4.0. The study, a premier for Romania will use PLS-SEM to validate the applicability of this model also for the Romanian farmers. A preliminary qualitative consultation with practicing digital farmers is also planned. The present paper is a premier in the literature about Romanian farmers and it is deemed to be a valuable tool for both researchers that could use the proposed model as field research too

as well as developers of digital tools for farmers who could use it to hone their tools to maximize perceived utility and ease of use. The model also suggests other avenues to promote these tools emphasizing utility of tools that ease the task of regulatory compliance. Finally, the social influence dimension of the model suggests ways and means to use change agents in the persuasive endeavor for digital agriculture adoption.

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Bio-note

Paul Stefan Markovits, is a senior *PhD* student at the *National University for Political Sciences and Administration (SNSPA), Management Faculty* in Bucharest, Romania. He is a seasoned marketing practitioner with experience in several industries in Romania and internationally currently active in the Romanian agricultural domain. As a doctoral student his research is focused on value creation through digitalization in general and digital agriculture dissemination and adoption in particular. He has already presented and published papers on these topics at several international conferences. The PhD research project is entitled “Strategic management transformations: Designing a strategic digital framework to enhance big crop farms’ performance in Romania” under the guidance of co-chairs Professor dr. dr. DHC Brătianu Constantin and Professor dr. habil. Florina Pînzaru.

CAPITAL FLOWS AND INSTITUTIONAL QUALITY: A SYSTEMATIC LITERATURE REVIEW

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Abstract: *The understanding of what drives capital flows is continually evolving. Earlier theories provided support for the role of macroeconomic factors, however, the drivers expanded to include non-macroeconomic factors following the Lucas (1990) paradox, which spurred interest towards examining the role of institutional quality and, in more recent years, capital market frictions. While other reviews of capital flow literature have concentrated on macroeconomic drivers, this review focuses on institutional factors and frictions and delves into three types of flows, as drivers can vary by type of flow. The literature is vast on drivers of foreign direct investment (FDI) while drivers of other types of capital flows have been less studied, and evidence remains scant. There is evidence of institutional quality helping to explain the Lucas paradox. Based on the literature reviewed in this paper, many institutional factors are important for FDI. Law and order and military in politics are notably important for both FDI and portfolio debt. Findings for portfolio equity are limited. On capital market frictions, the empirical evidence shows that distance; economic ties; and having a common language, border, and colonial past help explain capital flows; with distance driving all three types of capital flows. This review will help inform further research and policies aimed at attracting and retaining foreign capital, especially in developing economies that need such flows for economic development and poverty alleviation.*

Keywords: Capital flows, institutions, foreign direct investment, portfolio debt, portfolio equity

JEL Classification: E02, F21, F32, F41.

1. Introduction

There is a critical need for private capital flows to developing economies to help advance towards meeting the 2030 Sustainable Development Goals (SDGs), which have been assessed at the halfway mark in 2023 to be largely non achievable by 2030 (United Nations Global Impact, 2023). Attracting capital flows has long been a subject of analysis in economics, including through trying to identify factors that are important both theoretically and empirically.

Early economic theories sought to explain closed economy relationships between macroeconomic variables—such as the Keynesian closed economy model. As international trade and financial links between economies increased, open economy theoretical models and empirical analysis developed. Theoretical foundations for macroeconomic factors as

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drivers are ample, including—in earlier periods—classical and neoclassical approaches, the Mundell-Fleming model (Mundell (1963) and Fleming (1962)), portfolio theory, and—over the past few decades—the intertemporal approach to the current account, and new open economy macroeconomics. The importance of various factors for capital flows has varied across theoretical models over time.

This paper focuses on those theories that spurred interest in the contribution of institutional factors and frictions to the understanding of capital flows. In earlier periods, open economy neoclassical framework provided theoretical grounds for the importance of the marginal productivity of capital, where it was theorized that capital flows from rich to poor countries that have a higher marginal productivity of capital. Upon empirical investigation, Lucas (1990) found the neoclassical premise that capital flows from advanced to developing countries to not be corroborated by evidence as countries with a higher marginal productivity of capital had lower capital per worker. The Lucas critique spurred further research on what drives capital flows.

There is now consensus in the literature that various macroeconomic and institutional factors are important for capital flows. The empirical literature has mostly analyzed what drives capital flows in a push-pull framework that incorporates variables that are motivated by various theoretical models. Push factors sway investors to move financial flows from other economies—usually more developed economies—to recipient countries. Pull factors are conditions in recipient economies that help attract capital flows. This paper focuses on institutional factors, which have been found to be especially important in explaining the Lucas critique concerning the flow of capital to developing countries. In the coming sections of this paper, section 2 reviews the theoretical literature of capital flow drivers; section 3 reviews the empirical literature, and section 4 concludes.

2. The theoretical motivation for institutions as drivers of capital flows

2.1. The Neoclassical Approach to Capital Flows

Neoclassical theory suggests a flow of capital from North (advanced) to South (developing) countries that have a higher marginal productivity of capital. The neoclassical model is associated with Ramsey (1928), Swan (1956), Solow (1956), Cass (1965) and Koopmans (1965). The model assumes allocative efficiency of capital where capital recipients (poor countries) have a higher marginal productivity of capital compared to lenders of capital. Chenery and Strout (1966) extended the neoclassical view to indicate that South (poor) countries can borrow from North (rich) countries to help ease constraints they face such as a lack of savings and skills. The flow of capital from North to South countries contributes to income convergence between the countries at different levels of economic development. The marginal productivity of capital was a fundamental variable in determining the flow of capital in the neoclassical framework.

2.1.1. The Lucas Critique

Lucas (1990) critiqued the neoclassical premise on capital flows. Using an example of the United States (US) and India, he provided evidence that capital flows from North to South countries are very low compared to neoclassical predictions. Applying a Cobb-Douglas framework of constant returns to technology on U.S. and India data, Lucas found the marginal product of capital in India to be about 58 times the marginal product of capital in the U.S, which should result in capital flowing from North countries to South nations such as India. Under the neoclassical framework, one would not expect any investment to occur in the wealthy nations. However, this was not observed in practice. This has been termed the Lucas paradox—where there are insufficient capital flows from developed to developing countries despite poor countries having higher output per additional unit of capital and lower levels of capital per worker.

2.1.2. The Allocation Puzzle

Gourinchas and Jeanne (2013) further showed that capital distribution across developing countries flows in a direction that departs from neoclassical expectations. In what they called the “allocation puzzle”, Gourinchas and Jeanne (2013) showed that capital flows less to countries that invest and grow more. In their example, Korea who had an average annual investment rate of 34 percent and average total factor productivity growth of 4.1 percent per year from 1980 to 2000, obtained substantially low net capital inflows. In comparison, Madagascar, whose total factor productivity fell by 1.5 percent a year and whose average annual investment rate was short of 3 percent, received capital flows that are 7 percent of GDP on average each year. Essentially, capital flows from North to South countries are not just low—as illustrated by Lucas (1990), however, their allotment across developing countries is not correlated with theoretical expectations. To Gourinchas and Jeanne (2013), the allocation puzzle relates to the nature of the buildup of international reserves with the puzzle laying at the nexus between growth, saving, and international reserves.

2.1.3. Theories Incorporating Frictions as Drivers of Capital Flows

There is an expanding body of work on the importance of capital market frictions on the movement and size of capital flows. These frictions include an important element of institutional quality while looking closer into the role of capital/credit markets. The body of work includes Gertler and Rogoff (1990) whose framework relates movements of capital flows to cross-country capital markets efficiency. When accounting for frictions, they find that North-South capital flows are lower, world interest rates are less; riskless rates are equalized across borders while the domestic loan rate is higher in poorer countries. Key factors affecting capital flows include frictions (efficiency of capital markets), the marginal product of capital, interest rates, and output. Other models with frictions include Gordon and Bovenberg (1996) who presented a framework that shows that asymmetric information between countries explained the flow of capital. Other work includes Boyd and Smith (1997), Matsuyama (2004) who analyzed, as a capital market friction, institutional trait of domestic credit markets; and Ju and Wei (2010) who presented a framework that incorporated institutions and the composition of the capital flows.
Martin and Taddei (2013) have argued that the frictions depend on their origins, and they identified two types of frictions 1) limited pledgeability—implying a limitation on what creditors can repossess from debtors in case of default—further constraining credit and reducing capital inflows; and 2) adverse selection—where assets are over provided due to asymmetric information on borrower quality, leading to inefficient investments, resulting in an increase credit and capital inflows. They further acknowledge that limited pledgeability and adverse selection are, to a certain extent, present. While concentrating on limited pledgeability, Martin and Ventura (2012) found that having contracting frictions reduces capital inflows globally and less acute contracting frictions do not increase capital inflows.

2.2. The Empirical Literature

The empirical literature identifies “pull” and “push” drivers of capital inflows and institutional variables and frictions are pull factors, meaning that they help countries attract and/or retain capital flows. The empirical literature reveals that the importance of various factors can vary depending on various factors including the period analyzed, the countries analyzed, and components of capital inflows (FDI, portfolio and other components) analyzed, and econometric models used. Studies have shown that portfolio debt is a riskier type of capital inflow with greater risk for amplifying financial crisis (Calvo, Izquierdo and Mejía (2004) and Levy Yeyati (2006)) and creates large unfavorable externalities because they contribute to large settlements and exchange rate depreciations during financial crisis (Korinek, 2018). Studies have also shown that FDI is associated with stable economies and long-term economic growth (Mauro et al. (2007). Sarno, Tsiakas and Ulloa (2016) found that more than 80 percent of the changes in portfolio bond and equity flows is due to push factors from the US to other countries. While push factors are also important, this review focuses on institutional factors and capital market frictions whose literature has been less reviewed in a systematic manner.

2.2.1. Institutional factors

There is broad consensus on the importance of institutional factors on capital flows. The composite index of institutional quality—political risk—is important across the three types of capital flows. Findings, however, vary at the disaggregated level of institutional quality and across capital flows. Table 1 summarizes findings from the recent empirical literature.

Prior to the Lucas paradox, measures of institutional quality were hard to find, making it difficult to assess its importance on macroeconomic variables such as capital flows. After the paradox, there was an increase in measures of institutional quality, enabling research on its role in macroeconomic and other areas over the past few decades.

The role of institutional factors has been studied mostly on FDI. It's been found that government stability, conflict, law and order, democratic accountability, democracy, bureaucratic quality, corruption, military in politics, contract enforcement, investment profile, and other institutional factors matter for FDI. There are, however, sometimes differences in findings. For example, while some studies found corruption to be an important factor (Asiedu (2006), Habib and Zurawicki (2002), Belgibayeva and Plekhanov (2015), Farazmand and Moradi (2015)), other studies found corruption not important (Busse and Hefeker (2007), Adam and Filippaios (2007), Ali, Fies and MacDonald (2010)) or that the effect is ambiguous (Gastanaga, Nugent, and Pashamova (1998)). Gastanaga, Nugent, and Pashamova (1998) found that corruption is ambiguous as it tends be correlated with other investment climate variables, which when also included, cause the importance of the effect of corruption to disappear.

Table 1. Summary of Panel Literature on the Institutional Drivers of FDI

Variable	Significance	Sign	Author/s
Government stability	Yes	+	Busse and Hefeker (2007), Dutta and Roy (2011)
Internal conflict	Yes	+	Busse and Hefeker (2007)
External conflict	Yes	+	
Conflict (both internal and external)	No	+	Ali, Fies and MacDonald (2010)
Law and order/rule of law	Yes	+	Asiedu (2006), Asiedu and Lien (2011), Busse and Hefeker (2007), Okada (2013), Dutta and Roy (2011), Ali, Fies and MacDonald (2010)
	No		Cerutti, Claessens, and Puy (2019)
Democratic accountability	Yes	+	Asiedu and Lien (2011), Busse and Hefeker (2007), Dutta and Roy (2011), Jensen (2003); Farazmand and Moradi (2015)
Level of democracy	Yes	-	Li and Resnick (2003)
Bureaucracy quality/delay	Yes	+	Busse and Hefeker (2007), Okada (2013), Dutta and Roy (2011)
	Yes	-	Asiedu and Lien (2011)
	Yes	+	Dutta and Roy (2011)

Variable	Significance	Sign	Author/s
Socio-economic conditions	No		Busse and Hefeker (2007)
Corruption (presence of)	Yes	-	Asiedu (2006), Habib and Zurawicki (2002), Belgibayeva and Plekhanov (2015), Farazmand and Moradi (2015)
	No		Busse and Hefeker (2007), Adam and Filippaios (2007), Ali, Fies and MacDonald (2010)
	Ambiguous		Gastanaga, Nugent, and Pashamova (1998)
Military in politics	Yes	+	Dutta and Roy (2011)
	No		Busse and Hefeker (2007),
Contract enforcement	Yes	+	Gastanaga, Nugent, and Pashamova (1998)
Religious tensions	No		Busse and Hefeker (2007)
Religion in politics	Yes	+	Dutta and Roy (2011)
Ethnic tensions	No		Busse and Hefeker (2007)
Government effectiveness	Yes	-	Naudé and Krugell (2007)
Investment profile	Yes	+	Dutta and Roy (2011)
Political liberties repression	Yes	+	Adam and Filippaios (2007)
Civil liberties repression	Yes	+ (- for OECD countries)	Adam and Filippaios (2007)
Political instability	No		Li and Resnick (2003)
	Yes	-	Naudé and Krugell (2007)
Property rights protection	Yes	+	Li and Resnick (2003)
Political Risk (ICRG)	Yes	+	Hashimoto and Wacker (2012)
	No		Okada (2013)
Regulatory burden	Yes	+	Naudé and Krugell (2007)

Source: Author’s compilation from published research.
Notes: the following variables indicate the “absence of”: expropriation risk, socioeconomic stress, internal and external conflict, corruption, military in politics, religious tensions, and ethnic tensions.

In reading Table 1, the following is worth noting. The measure by Ali, Fies and MacDonald (2010) is a simple average of ICRG indices of law and order and investment profile. Some studies use a bureaucratic quality indicator from the ICRG (Busse and Hefeker (2007) and Okada (2013)) while others use a bureaucratic delay indicator from the Business Environmental Risk Intelligence. Belgibayeva and Plekhanov (2015) use a control of corruption variable, which is found to positively affect FDI while other studies use a variable that indicates the presence of corruption, which negatively affects FDI. Belgibayeva and Plekhanov (2015) is here interpreted as being that the presence of corruption negatively affects FDI. The measure by Ali, Fies and MacDonald (2010) is a simple average of ICRG indices of bureaucracy quality and corruption.
There has been more analysis of portfolio debt compared to portfolio equity, likely given the importance of repayment obligations and maturity/rollover risk implications of debt financing.

There is evidence that law and order, bureaucratic quality, military in politics, and overall political risk matter for portfolio debt (Table 2). The importance of portfolio equity as a determinant has been less studied compared to the other types of capital flows and evidence has so far not shown a strong role of institutional factors.

While some studies have found institutional quality to explain the Lucas paradox, others have found institutional quality to partially explain the paradox. For example, Alfaro and Volosovych (2008) found institutional quality to explains the Lucas Paradox where the ICRG composite is positively related with direct and portfolio equity flows. While Akhtaruzzaman (2019) found the institutions index as important and positively associated with FDI but does not alone account for the Lucas paradox.

Table 2. Summary of Panel Literature on the Institutional Drivers of Portfolio Flows

Variable	**Significance**	**Sign**	**Author/s**
Portfolio inflows (equity and debt) as the dependent variable			
Political Risk (ICRG)	Yes	+	Byrne and Fiess (2016)
Government stability	No		
Socioeconomic stress	No		
Internal conflict	No		
External conflict	No		
Corruption	No		
Military in politics	Yes	+	Akhtaruzzaman (2019)
Religious tensions	Yes	+	
Law and order	Yes	+	
Ethnic tensions	No		
Democratic accountability	No		
Bureaucratic quality	No		
Portfolio equity as the dependent variable			
Political Risk (ICRG)	Yes	+	Byrne and Fiess (2016)
	No		Caporale, et al. (2022)
Law and order	No		Cerutti, Claessens, Puy (2019)
Portfolio debt as the dependent variable			
Political Risk (ICRG)	Yes	+	Byrne and Fiess (2016)
	No		Caporale, et al. (2022)
Government stability	No		
Expropriation risk	No		
Socioeconomic stress	No		
Internal conflict	No	+	
External conflict	No		Akhtaruzzaman (2019)
Corruption	No		
Military in politics	Yes	+	
Religious tensions	No	+	
Law and order	Yes	+	
	No		Cerutti, Claessens, Puy (2019)
Ethnic tensions	No		
Democratic accountability	No		Akhtaruzzaman (2019)
Bureaucratic quality	Yes	-	

Source: Author's compilation from published research.

Notes: the following variables indicate the "absence of": expropriation risk, socioeconomic stress, internal and external conflict, corruption, military in politics, religious tensions, and ethnic tensions.

There are often differences in the explanatory power of various institutional variables, which is attributed to various factors in the empirical literature. Findings can vary depending on the model used (Table 3). For example, Akhtaruzzaman (2019) found the absence of internal conflict to be important in explaining portfolio inflows when using cross-section estimation and not important when using a panel fixed effects (FE) model and a panel generalized method of moments (GMM) model. Akhtaruzzaman (2019) also found the absence of the military in politics to be important in determining portfolio inflows when using panel FE and panel GMM and in determining portfolio debt inflows and not important when using cross-section estimation. Law and order were found to be important in explaining private debt inflows when using panel FE and panel GMM and not with cross-section estimation. Gastanaga, Nugent, and Pashamova (1998) found bureaucratic quality to be important in determining portfolio debt inflows when using panel GMM and not when using panel FE or cross section estimation. They also found the effect of institutional variables on FDI to vary depending on the estimation procedure and model specification and that the presence of other variables in the model can also influence the importance of institutional variables on FDI.

Table 3. Models used in Analyzing Institutional Determinants of Capital Flows

Model	**Authors (year of publication, number of countries in panel, years, data frequency)**
Fixed effects and/or random effects.	Adam and Filippaios (2007), Ali, Fiess, and MacDonald (2010), Asiedu (2002), Asiedu (2006), Belgibayeva and Plekhanov (2015), Buchanan, Le, and Rishi (2012), Busse and Hefeker (2007), Caporale, Spagnolo, and Nicola (2022), Dutta and Roy (2011), Gastanaga, Nugent, and Pashamova (1998), Hashimoto and Wacker (2012), Jensen (2003)
Two-stage least squares/instrumental variables	Akhtaruzzaman (2019), Alfaro and Volosovych (2008), Buchanan, Le, and Rishi (2012), Cerutti, Claessens, and Puy (2019)
Generalized method of moments (GMM)	Asiedu, Jin, and Nandwa (2009), Asiedu and Lien (2011), Busse and Hefeker (2007), Naudé and Krugell (2007), Okada (2013)
PANIC approach	Byrne and Fiess (2016)
Generalized least squares (GLS)	Farazmand and Moradi (2015), Galstyan and Lane (2013)
Ordinary least squares (OLS) with heteroskedasticity corrected standard errors	Globerman and Shapiro (2002)
Probit model	Habib and Zurawicki (2002)
Pooled panel	Li and Resnick (2003)

Source: Author’s compilation from published research.

Model specification can also affect the results. Akhtaruzzaman (2019) did not find institutional variables to be significant in explaining FDI in the cross-section estimates, panel FE or panel GMM models when only institutional variables were included in the model. When macroeconomic variables were included in the model, Akhtaruzzaman (2019) found institutions to matter in a cross-section estimation for FDI that included the political risk index from the ICRG and the governance index from the World Bank as measures of institutional

quality and other variables were GDP per capita, capital account openness, average schooling, distantness, trade, financial development, and inflation. Alfaro and Volosovych (2008) and thereby helping to resolve the Lucas paradox.
Results can also vary depending on countries and/or the period studied. For example, Adam and Filippaios (2007) found civil liberties repression to have a positive association with FDI for other countries but a negative association for OECD countries. Asiedu and Lien (2011) found democracy to be important and have a positive effect on FDI in sub-Saharan African countries for which the presence of natural resources is low, otherwise the effect is negative. These studies also point to the need to focus analysis on specific groups of countries or regions for further insights. Table 2 shows summarizes recent panel data studies including models used, periods covered, and results found.

2.2.2. Capital market frictions and other variables

The study of the role of frictions on capital flows is growing (Table 4). Moez and Mansour (2021) incorporated capital market frictions in analyzing the effects of non-conventional US monetary policy on gross total capital flows to emerging markets. They found that capital market frictions (for distance, FTA, and language) are significant in explaining capital flows and the relationship is negative where, as frictions decrease, capital inflows increase. They also found that frictions are most important in explaining portfolio flows compared to FDI. Galstyan and Lane (2013) found that the size of the initial cross-country holdings of total portfolio equity and debt flows, the level of trade, common language, geographical distance, and shared institutional linkages assisted in international portfolio adjustment at the time of and after the global financial crisis. Milesi-Ferretti and Tille (2011) found that the degree of international financial integration helped explain capital flows. Some studies have included sets of frictional dummy variables such as proximity, language, currency or trade bloc, legal system effectiveness, the effect of a major financial center with varying importance (Portes and Rey 2005).

Table 4. Summary of Panel Literature on the Institutional Drivers of Capital Market Frictions

Variable	Significance	Sign	Author/s
As determinants of Foreign direct investment			
Distance	Yes	-	Habib and Zurawicki (2002), Belgibayeva and Plekhanov (2015)
Economic ties	Yes	+	Habib and Zurawicki (2002)
Common language	Yes	+	Belgibayeva and Plekhanov (2015)
Common border	Yes	+	
Common colonial past	Yes	+	
As determinants of portfolio equity			
Distance	Yes	-	Galstyan and Lane (2013)
Common language	No		
As determinants of portfolio debt			
Distance	Yes	-	Galstyan and Lane (2013)
Common language	No		

Source: Author’s compilation from published research.

3. Concluding Remarks

This work reviewed the economic literature on the determinants of capital flows, focusing on the role of institutions on three capital flow aggregates: FDI, portfolio equity, and portfolio debt. The Lucas critique provided the theoretical spark for the examination of the role of institutional factors on capital flows and was further supported by Gourinchas and Jeanne's (2013) allocation puzzle. The role of institutional factors has been most examined for FDI and less so on portfolio flows, especially equity. There is empirical support for the importance of institutional factors in explaining the Lucas paradox, where government stability, conflict, law and order, democratic accountability, democracy, bureaucratic quality, corruption, military in politics, contract enforcement, investment profile, and other institutional factors have been found to matter for FDI. There is also evidence that law and order, bureaucratic quality, military in politics, and overall political risk matter for portfolio debt. The literature reviewed in this paper shows that the importance of capital market frictions in explaining the Lucas paradox is growing but more is needed to better understand their importance across countries at various levels of economic development and across different types of capital flows, particularly portfolio flows. Limitations of the paper include that it is not an empirical work and does not cover macroeconomic determinant of capital flows, whose literature is vast and could not be covered within the confines of this paper. Further analysis is needed to examine the role of institutional factors on portfolio flows independent of other capital flows, especially for developing countries and at a regional and country level. Further research also needs to bring more clarity on the which findings are more important given that results can be sensitive to various models by determining which models are most appropriate for this area of study.

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Bio-note

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THE PERCEPTION OF CORPORATE SUSTAINABLE DEVELOPMENT: INVESTIGATING THE EMPLOYEE PERSPECTIVE

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Abstract: *This paper endeavors to assess the overall level of employees' perception of corporate sustainable development (CSD) across its three defining dimensions – economic, social, and environmental. Variations in the perceived significance based on individual and professional characteristics among employees are additionally identified. The research methodology involves conducting Structural Equation Modeling (SEM) based on the information collected from a survey distributed to employees of companies operating in the information and communication technology (ICT) sector within Romania's Western region. The findings affirm a direct, restrictive and positive impact of employees' socio-professional characteristics on their perception of CSD.*

Keywords: corporate sustainable development, employees' perception, economic, social and environmental dimensions, structural equation modeling

JEL classification: M12, Q01, Q56.

1. Introduction

Corporate sustainable development denotes the progress achieved through favourable performance across an organisation's economic, social, and environmental dimensions. To this end, numerous organisations are developing and implementing initiatives to achieve the sustainable objectives set for the organisation, aiming to meet the needs of various stakeholders. Employees assume a pivotal role in driving CSD. How employees perceive sustainability initiatives can exert a substantial influence on their subsequent engagement to implementing them. Therefore, this research aims to approach the topic under investigation as a perceptual phenomenon, in an attempt to capture the concept of CSD, perceived from the perspective of employees as internal stakeholders, rather than the actual activities subordinated to it and carried out at the organisational level.

This paper is structured into four primary sections. The first section provides a concise overview of the topic. The second section involves a critical examination of the literature concerning the concept and dimensions, as well as the determinants of CSD in relation to employees' perception. The third section details the quantitative analysis conducted using advanced research methodology and statistical processing, utilizing a comprehensive set of indicators. The fourth section presents the findings, the theoretical and practical ramifications of the undertaken research endeavor as well as the recommendations for prospective research paths.

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2. Literature Review

2.1. The Dimensions of Corporate Sustainable Development

The Triple Bottom Line concept introduced by Elkington in 1997 upholds the harmonious advancement of the economic, social, and environmental facets within organisations to yield sustainable results, thus incorporating economic prosperity, social equity and environmental protection. Presently, this concept stands as one of the most extensively employed approaches for revealing and implementing the corporate evolution paradigm (Nunhes et al., 2022). Sustainability transcends mere compliance with moral and legal standards to optimize the well-being of a diverse array of stakeholders, as emphasized by Freeman et al. (2020). Engaging in sustainable behaviors inherently entails an organisation's responsibility to posterity, necessitating a conceptual, ethical outlook in the long run. This may involve reconciling immediate advantages for one group of stakeholders with enduring ones for a different set of stakeholders, as discussed by Bhattacharya et al. (2022). Within the economic dimension, challenges include retaining intellectual assets, maintaining sustainable cost structures and profit margins, ensuring sustained measures for innovative competitiveness, and aligning economic considerations with the principles of societal and environmental resources. Regarding the social dimension, this entails the well-being of human capital, and includes both physical and psychological health and safety, as well as competencies and learning that determine the ability to produce additional value for both the organisation and society at large. Within the environmental dimension, there are two facets of natural resources: essential natural resources, indispensable for sustaining the continuous functioning of ecosystems, alongside sustainable natural resources, that have the ability to be regenerated, such as reclaiming desertified areas or transitioning from fossil fuel energy to alternative energy sources (Elkington, 1997; Nunhes et al., 2022).

2.2. Determinants Influencing Employees' Perception of Corporate Sustainable Development

Empirical research suggests employee influence on specific sets of factors defining the three dimensions of CSD. Within the economic dimension, the most important determinants pertain to job performance of employees linked to the economic performance of the organisation and the proposals submitted by employees for enhancing processes, products and services, which are associated with their innovative capabilities. Customer data privacy protection is a pivotal element in building and enhancing connections with an organisation's customers. Employee groups, particularly those in specialized procurement departments, can exert influence on procurement optimization through decisions related to the organisation's suppliers (Ruiz-Pérez et al., 2021). Various factors such as occupational health and safety, employee well-being and development have been identified as essential elements in professional practice, following the principles of sustainable corporate social development (Sánchez-Hernández et al., 2021). Fostering and sustaining connections among employees enhances job satisfaction and positively impacts the organisation. Ensuring unrestricted access to learning and development resources, coupled with targeted training programs, is essential for fostering sustainable human capital development and promoting enduring employee behavior. Organisational culture shapes employees' perceptions of sustainable organisational practices (Espasandín-Bustelo et al., 2020).
Within the environmental context, the impact factors comprise the efficient utilization of resources and the mitigation of environmental repercussions stemming from processes, products, and services provided (Ruiz-Pérez et al., 2021). Adopting sustainable management practices positively influences organisational performance (Wang et al., 2020). Furthermore, employees' perception of sustainable organisational practices enhances organisational performance by nurturing employees' intrapreneurial behavior (Luu, 2020).

Table 1. Determinants of corporate sustainable development

Determinants of Economic Dimension	Determinants of Social Dimension	Determinants of Environmental Dimension
Financial Performance	Occupational Health and Safety	Circular Use of Resources
Optimizing Profitability	Employee Interactions	Environmental Impact
Customer Interactions	Human Capital Development	Sustainable Supply Chain
Quality of Products and Services	Work Schedule	Innovation of Products and Services
Pricing Policy	Organisational Culture	Renewable Energy

Source: Own processing according to literature (Ruiz-Pérez et al., 2021; Sánchez-Hernández et al., 2021; Espasandín-Bustelo et al., 2020; Wang et al., 2020; Luu, 2020)

2.3. Structural Equation Modeling

Structural Equation Modeling constitutes an inclusive statistical method employed to concurrently depict, estimate, and assess the connections established among the observed endogenous variables and the latent independent variable constructs within a statistical model.

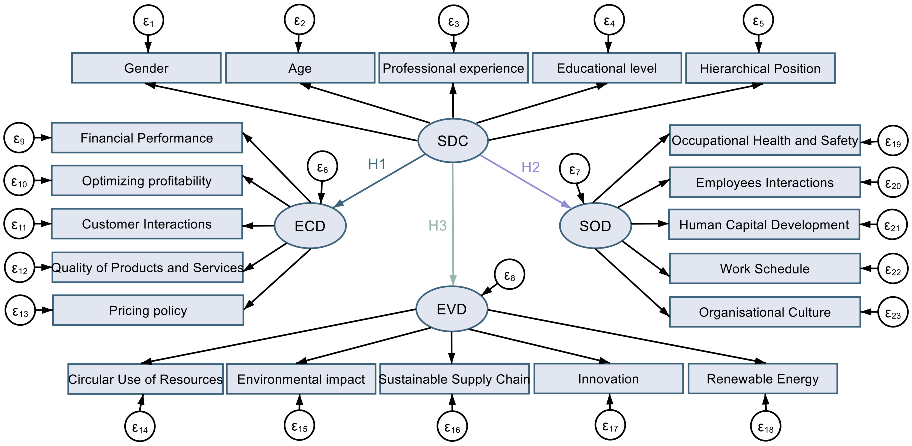

Figure 1. SEM Model Configuration. Latent variables: SDC = Socio-demographic characteristics; ECD = Economic dimension; SOD = Social dimension; EVD = Environmental dimension.
Source: Own elaboration in Stata 18.

The model specification is rooted in diverse theoretical frameworks pertinent to a given subject and a characteristic research approach. SEM enables the testing of hypotheses by examining the predetermined theoretical network of relationships among the variables incorporated in the specified model, explicitly determining the standard errors of the coefficients. Globally recognized, SEM serves as a robust analytical method applicable across various disciplines such as management, economics, environmental science and engineering, social sciences, education, and beyond, making it well-suited for evaluating diverse trends (Stata, 2023). The SEM model depicted in Figure 1 is employed to discern the relationships established among the four latent and 20 observed variables encompassed in the four sections of the research approach. Specifically, it explores the influence of socio-professional characteristics (SDC) on employees’ perceptions of the economic (ECD), social (SOD), and environmental (EVD) dimensions regarding CSD.

3. Methodological Approach

The main objective of this research endeavor is to uncover and assess the extent of CSD perception among employees within the ICT sector.

Research objectives:

1. Determine the overall extent of employees' perception of CSD across its three dimensions: economic, social, and environmental.
2. Examine the variations in perceptions of CSD based on the socio-professional attributes of employees.

Research hypotheses:

H1: The socio-professional characteristics of employees, such as gender, age, professional experience, education level, and hierarchical position have a direct impact on their perception of the economic dimension of CSD.

H2: The socio-professional characteristics of employees, such as gender, age, professional experience, education level, and hierarchical position have a direct impact on their perception of the social dimension of CSD.

H3: The socio-professional characteristics of employees, such as gender, age, professional experience, education level, and hierarchical position have a direct impact on their perception of the environmental dimension of CSD.

To achieve this objective, we conducted a quantitative analysis by reviewing the results of a survey administered to personnel employed by companies within the ICT sector situated within Romania's Western region. Subsequent to the examination of the collected responses, a dataset with 105 valid responses was confirmed. The distribution of the survey was facilitated through digital communication platforms (specifically, Google Forms), and the data collection occurred from February to March 2023. The survey is structured into four distinct sections, each of which comprises five individual items, thereby yielding a cumulative set of 20 questions. The items were formulated based on the specific determinants defined in section 2.2 for each dimension of CSD.

4. Results and Discussion

Figure 2 illustrates the distribution of weights for the socio-demographic traits derived from the survey. Based on the findings, 24 % of respondents were female and 76 % were male. Regarding age groups, 16 % were Generation Z (18–28 years), 65 % were Millennials (29–43 years), 18 % were Generation X (44–58 years), and 1 % were Baby Boomers (over 58 years). This demographic breakdown mirrors the prevailing characteristics within the IT industry: predominantly male, skewed towards younger and middle-aged individuals, with seniors being less represented numerically. The distribution of professional experience in the current organization is as follows: 58 % of respondents possess professional experience ranging from 1–5 years, 25 % ranging from 6–10 years, 9 % ranging from 11–15 years, 7 % ranging from 16–20 years, and 2 % over 20 years of professional experience. This breakdown reflects a predominantly young workforce and the fluidity of job transitions in the sector. Regarding education levels, 56 % of respondents hold a Bachelor's degree, followed by 44 % with a Master's degree. This distribution indicates the sector's emphasis on higher education qualifications among its workforce. Regarding hierarchical positions, 73 % of respondents hold execution positions, while 27 % assume management roles. These percentages reflect industry-specific hierarchical structures, such as network setups, where team members report to multiple coordinators, fostering flexible decision-making processes.

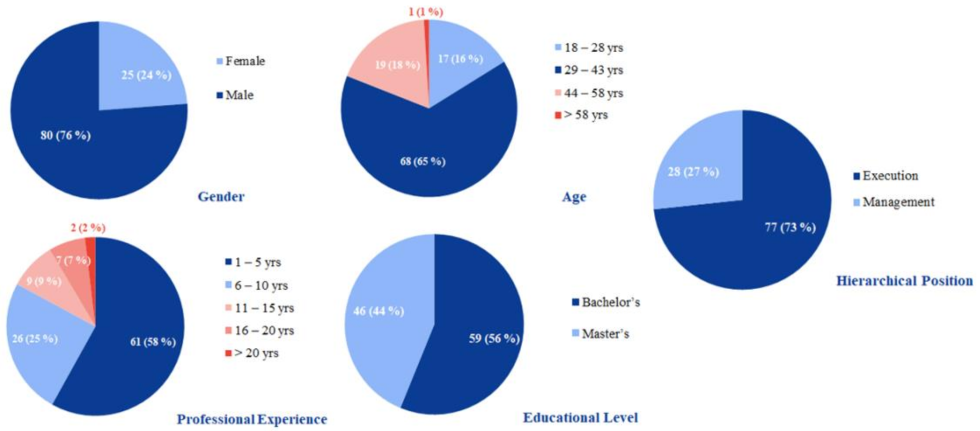

Figure 2. Statistics of respondents' socio-demographic characteristics.
Author's analysis/processing based on own data.

The statistical method used for hypothesis testing is based on the application of structural equation modeling (SEM). The proposed SEM model and diagram were designed according to the previously formulated hypotheses and processed using the maximum likelihood estimator (MLE). Model estimation was performed using the software package for statistical processing of scientific data, Stata version 18 (2023). The SEM model presented below (Fig. 3) is used to identify the relationships established between the four latent variables included in the research approach, namely the influence of socio-demographic characteristics (SDC) on employees' perceptions of the economic (ECD), social (SOD), and environmental (EVD) dimensions. The SDC section identifies the socio-demographic characteristics of respondents, covering: gender, age, work experience within the current organization, education level, and current hierarchical position. It consists of 5 items in total. The ECD section aims to identify employees' perception of CSD related to the economic dimension. It comprises 5 items in total. The SOD section endeavors to assess employees' perception of CSD concerning the social dimension, consisting of 5 items in total. The EVD section attempts to acknowledge employees' perception of CSD corresponding to the environmental dimension, comprising a total of 5 items. The robustness tests of the SEM model indicate a moderate model fit, as evidenced by the CFI („Comparative Fit Index") and TLI („Tucker-Lewis Index") values of 0.59 and 0.54, respectively. Furthermore, in more than 83 % of cases, the fluctuations in endogenous variables can be explained by exogenous variables, as illustrated by the Coefficient of Determination (CD), highlighting a strong link between observable and latent variables. The Cronbach's Alpha Test results affirm an optimal level of significance with a total scale value of 0.77, alongside no concerns regarding convergent and discriminant validity.

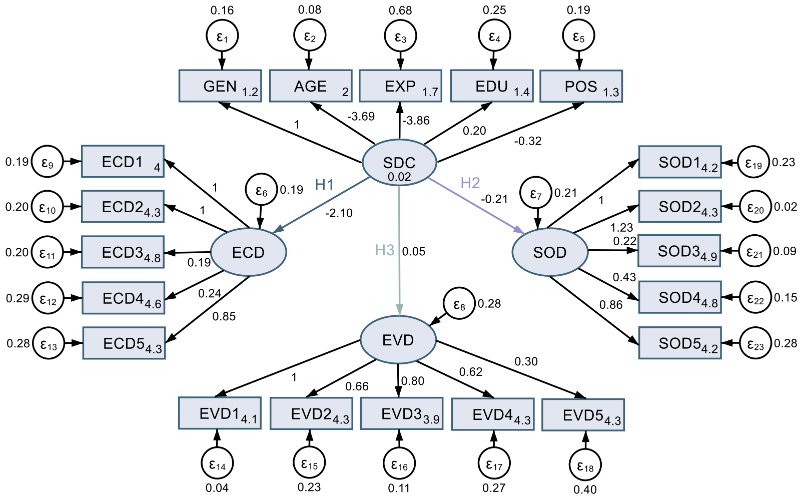

Figure 3. Results of the SEM Model.
Source: Own processing in Stata 18.

Among the analyzed variables within the SDC construct, the variable „Gender“ stands out with a highly significant coefficient (GEN = 1***; $p < 0.001$). The variables „Age“ and „Professional Experience“ exhibit substantial coefficients and considerable statistical significance (AGE = -3.69**; EXP = -3.86**; $p < 0.01$), with the negative sign indicating an important inhibitory impact. Conversely, „Education Level“ exerts the lowest influence (EDU = 0.20; $p > 0.05$), while „Hierarchical Position“ (POS = -0.32; $p > 0.05$) makes a minor inhibitory contribution within the construct, both lacking statistical significance.
The SDC construct imposes a notable and constraining influence (coefficient = -2.10**), a direct but less inhibitory impact (coefficient = -0.21), and a more pronounced direct positive influence (coefficient = 0.05) on employees’ perception levels of the economic, social, and environmental dimensions. Considering H1 outlined earlier, it is affirmed a direct and significantly restrictive effect of employees’ socio-demographic traits, such as gender, age, professional experience, education level and hierarchical position, on their perception of the economic dimension, further validated by the strong statistical significance of the coefficient associated with the economic dimension (ECD; $p < 0.01$). These findings indicate that female employees express a higher level of perception of sustainable economic objectives implemented at the organizational level and therefore exert a more pronounced influence on the economic dimension. Similarly, older employees tend to engage more in sustainable behaviors due to their robust values regarding responsible job performance, conscientiousness, and agreeableness, resulting in more frequent resource-conserving practices with a positive environmental impact. Likewise, employees with extensive professional experience tend to perceive and influence sustainable economic goals to a greater degree within the organization. The significant percentage of employees with higher education has a comparatively lesser differentiation impact compared to other socio-professional criteria. This result does not contradict, but rather indicates that employees with higher levels of education are more likely to promote and positively support corporate sustainable development goals. Regarding the restrictive but reduced influence observed in the hierarchical position variable, on one hand, there is a high proportion of respondents in management positions, and on the other hand, the specific hierarchical structures within the industry sector allow for efficient distribution and a high degree of transparency of information. Consequently, the differentiation impact of this criterion, as well as the information asymmetry associated with the hierarchical level held, is found to be lower compared to other socio-professional criteria. Regarding H2 and H3, it is established that

employees' socio-demographic traits, such as gender, age, professional experience, education level and hierarchical position, have a direct, positive influence with relatively fewer restrictions on their perception of the social and environmental dimensions. However, H2 and H3 are only partially validated due to the limited statistical significance of the coefficients associated with the social (SOD; $p > 0.05$) and environmental (EVD; $p > 0.05$) dimensions of CSD.

4.1. Theoretical Ramifications of the Research Approach

Corporate sustainable development is a comprehensive approach that acknowledges the interconnectedness among its three defining dimensions – economic, social, and environmental. It underscores the integration of sustainability principles into business strategies and practices, engaging stakeholders and promoting long-term prosperity while considering social and environmental impacts. Embracing and implementing the concept of CSD allows organisations to facilitate the establishment of resilient and inclusive infrastructures, achieving competitive advantage and generating sustainable value. Employees exhibit a positive perception of CSD when they are aware of and understand their organisation's sustainable initiatives. Professional commitment is enhanced when employees sense a strong organisational commitment to sustainable development, aligning with their individual values.

The analysis of the results uncovered a substantial and constraining impact of employees' socio-professional characteristics, such as gender, age, and professional experience, on their perception of CSD. These factors notably contribute to the variation in perceptions regarding the significance of economic, social, and environmental sustainability objectives endorsed at the organisational level. Female employees typically exhibit a heightened perception of CSD. Older employees with substantial organisational experience perceive the importance of sustainable economic objectives more keenly. Conversely, younger generations display stronger tendencies towards the significance of sustainable social and environmental goals. These findings align with prior research regarding varied individual perceptions influenced by intrinsic factors such as gender, age, and professional experience. These factors can either enhance or diminish perceptions of CSD. Notably, female employees exhibit higher levels of sustainable awareness across economic, social, and environmental dimensions, a trend consistent with existing literature (Rosati et al., 2018). This literature also indicates that female employees tend to have a heightened awareness of environmental degradation and are more inclined to adopt socially and environmentally sustainable practices.

The variable „Age" similarly exerts a notable influence, with older employees demonstrating distinct individual and professional values that shape pronounced tendencies and habits in engaging with sustainable behaviors. This observation aligns with findings in the current literature (Wiernik et al., 2016).

Moreover, the variable „Professional Experience" within the current organisation emerges as the most influential factor in shaping employees' perceptions of the significance of sustainable economic goals. This influence is directly proportional and exhibits a positive correlation with the accumulated level of work experience. Consequently, individuals with substantial organisational tenure tend to hold a heightened perception of the importance of sustainable objectives.

4.2. Practical Ramifications of the Research Approach

Positive perceptions of CSD contribute to increased emotional and professional motivation among employees. Genuine recognition of the corporate commitment to sustainable practices supports the process of relating, where individuals identify with the collective organisational identity, fostering employee commitment and individual contributions to CSD efforts. Positive perceptions of CSD thus contribute also to the enhancement of employee job satisfaction. Effective communication and transparency about sustainable initiatives are key to shaping employee perceptions, as transparency builds trust and fosters positive perceptions of CSD.

The practical implications yielded by the research approach emphasize the need to enhance the focus on how employees perceive sustainable initiatives implemented at the organisational level. Concerning the economic dimension, employees exhibit a more favorable perception of establishing goals for continuous improvement in financial performance and maximizing profits to ensure sustained business continuity. Enhancing performance within the economic dimension involve fostering a greater understanding among employees about their contributions to attaining sustainable organisational economic objectives. An effective approach could be to communicate and track individual objectives that align with the accomplishment of sustainable economic goals at the departmental, divisional, or organisational level.

Within the social dimension, employees preceive the organisation’s commitment to the physical, mental, and social well-being of its workforce, as well as its support for fostering relationships among employees, promoting team spirit, and cultivating a sense of belonging, in a positive light. It is crucial for organisations to prioritize and advocate for a healthy work-life balance, establishing clear boundaries regarding organisational expectations and employee readiness to fulfill them. Fostering open communication, offering resources and support, and cultivating a balanced work environment can mitigate negative perceptions, contributing to a sustainable and gratifying work experience for employees.

Within the environmental dimension, employees hold a more favorable perception of the effectiveness of circular resource utilization in operational processes and the responsible sourcing achieved through a sustainable value chain. In cases where organisations fail to communicate their commitment to sustainable practices effectively, employees may not grasp the significance or importance of implementing such measures. Hence, the utilization of explicit and consistent communication channels, enhancing the accessibility of information, proves crucial in keeping employees informed about the organisation’s environmentally responsible initiatives.

Employee perceptions of CSD significantly influences the success of organisational efforts in implementing sustainable initiatives. The extent of employees’ awareness and comprehension of sustainable development initiatives within the organisation can notably affect their perception and subsequent active involvement in sustainable activities.

4.3. Constraints and Potential Future Research Directions

Assessing the extent of employees’ perception of CSD presents an intricate challenge due to the subjective nature of perception, which shapes the individual interpretation and evaluation of sustainable initiatives.

The concept of CSD encompasses diverse dimensions, such as economic, social, and environmental. Consequently, constructing dependable models and tools to evaluate and validate the comprehensive level of perception by aggregating multiple determinants defined for each dimension may encounter limitations in accurately capturing the intricate structure of employee perceptions.

Recommendations for future research directions broadly point to leveraging alternative data sources, employing supplementary research methodologies, or applying suitable analytical techniques to address these limitations. While questionnaires and other quantitative research methods are frequently employed to evaluate employee perceptions, they might not encompass the complete range and depth of employee experiences and perspectives. Qualitative research approaches like interviews or focus groups could offer more nuanced insights, although findings may be limited in terms of generalizability. Therefore, it is advisable to combine qualitative and quantitative analysis methods to enhance the overall strength and reliability of the results.

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Bio-note

Erika-Ligia Heler is a PhD student in Management at Doctoral School of Economics and Business Administration within the West University of Timișoara. Her present research centers on examining employees' perceptions of corporate sustainable development, with the objective of understanding its potential impact. Actively participating in scholarly pursuits, such as conference attendance and paper publication, she endeavors to make substantive contributions to her field of study and its broader implications.

RATIONALE OF FINANCIAL STABILITY IN SOUTH AFRICA: CONSTRUCTING A FINANCIAL STRESS INDEX

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Abstract: *The need for financial stability became apparent after the devastating events of the 2008 financial crisis. It was around this time that central banks around the world started to construct and implement scientific methods to assess financial stability. This research gives a comprehensive understanding of financial stability and makes use of scientific methodology by constructing the financial stress index for South Africa from periods 2006 through 2015 to predict and attain financial stability. After the 2008 global financial crisis, South African policymakers have put in place some policies and tools to enhance financial stability. To complement these policies, a new financial framework was developed, that is, the twin peaks model to continuously gather data and asses financial stability on a continuous basis. To put this framework into practice the financial stress indicator or index acted as a single comprehensive tool to measure and monitor stability. Included in this index are indicators that capture the different dimensions of the banking sector. The results gathered from this index contribute to the understanding of financial stability and how it is measured. It was found that the volatility or patterns of the financial stress index could be used as predictions and early warning tools for policymakers or the Central Bank to step in and contain potential risks. Moreover, from the empirical data collected the financial stability policies in South Africa are effective, as the financial stability index after the period of crises remained stable.*

Keywords: financial stability, financial regulation, financial stress index, South Africa

JEL classification: D81, G01, G28.

1. Introduction

It has been difficult to gain consensus among researchers as to what financial stability really is. Some researchers define financial stability through identifying financial instability while others suggest that it is the ability of financial systems to resolve systemic risk. Financial stability could be seen as the ability of the financial system to facilitate efficient allocation of economic resources in pursuit of enabling the performance of an economy through economic growth, wealth accumulation, and ultimately social prosperity (Schinasi, 2011). What this means is that the financial system is the backbone of the economic flow of activity, which oils the smooth running of households and firms' operations. Financial stability is to ensure that the circular flow runs steadily, without any drastic shocks along the way. To achieve financial stability, it is necessary to prevent financial problems from becoming systemic as they pose a serious threat to the efficient functioning of the economic system (Allen and

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Wood, 2006). The importance of financial stability became more apparent after the shocking consequences of the global financial crisis of 2008.

Looking back into the pre-crisis period, this will reveal that before the 2008 financial crisis the mandate for monetary policy was to balance an acceptable level of inflation and employment (Oosterloo and de Haan, 2004). At that time policy makers, were concerned about balancing an acceptable level of inflation and employment. There were no significant efforts made to measure financial stability. Banking crises currently were predominantly non-existent, and the role of the central banks was bank supervision and liquidity provision. In such a world, financial stability was not seen as a major concern and the responsibility of the central bank for financial stability was limited.

The aftermath of the 2008 crises renewed the role of Central Banks. This new role was first recognized when the central bank in the United States stepped in after the crisis to get a grip on the situation (Silva et al., 2017). The Central bank provided emergency liquidity support to institutions and markets under strain, directed, and regulated troubled institutions. This period sought the awakening of governments in many countries of the world to take necessary measures to reinforce the financial stability mandates of central banks and give additional regulatory powers to these institutions. Although central banks retain their key role as liquidity, providers, and managers, today they are additionally responsible to keep the risk of system-wide financial disruption acceptably low by identifying and quantifying sources of risk. For example, poor credit standards, or leveraged asset booms and their impacts on an economy (Drehmann et al., 2011). The new role of the central bank also included constant supervision and a formal system of sound loan lending standards that will allow the bank to guard against imprudent risk-taking in the banking sector (Oosterloo and de Haan, 2004). The idea, here, is to manage risk to an acceptable level.

The financial system is always in a state of flux and so fluctuations are not always seen as something bad (Schinasi, 2011). The aim of financial stability is not to achieve the complete eradication of all financial problems. This is mainly because of two reasons (Cukierman, 2013). Firstly, it is not possible to have a dynamic financial system that would avoid volatility and turbulence and be capable enough to manage uncertainties and risks involved in financial services. Secondly, it would be undesirable or economically inefficient to adopt measures that will be overly protective of market stability and overly constraining of risk-taking. This may affect economic efficiency significantly and create a moral hazard of even greater risk-taking. The idea of financial stability is to attain a stable financial environment without any major spill overs to economic efficiency, growth, and performance of an economy (Schinasi, 2011).

To elaborate further, the financial system is not expected to return to its original position after a disturbance as any other Newtonian equilibrium but rather it is allowed to vary if financial variables are able to perform their essential functions. For example, investment, savings, lending, borrowing, wealth accumulation, and growth. The financial system does not have a fixed point at which it exists and thus exists in a continuum (Schinasi, 2011). Once the financial system is disrupted to an extent that some of its key elements fail to perform its facilitative and efficiency-enhancing role, this may be a problem and pose a threat to economic growth (Cukierman, 2013). The alternative here is to take a forward-looking approach, continually analyse trends of key indicators, and swiftly step in once the indicators sight a potential problem.

The goals of this research are to investigate and analyse the financial stability framework and practices of the South African Reserve Bank (SARB), and to analyse the recent trends in financial stability in South Africa based on the financial stress index (FSI).

The methods and procedures undertaken for the research are to analyse the literature on the new financial stability measures and policies that have been implemented in South Africa post the 2008 global crisis. Once secondary research has been carried out, the research will progress onto primary research or imperial evidence of financial stability in South Africa. To

carry out the imperial work two steps are taken. The first step is to identify variables in the research and the next step is to collect data on the identified indicator. The data is collected by making use of databases like Tomson DataStream and McGregor. Quarterly data over a period of nine years is collected. By plugging the collected data into a formula, the research can create a financial stress index over a period of nine years. This will allow the research to assess how well the new financial stability policy is implemented in South Africa.
The research takes a historic perspective to realize the financial stability issues of an unregulated financial system. It then realizes the importance of financial stability and defines financial stability and key concepts to get a thorough understanding of financial stability. The research then progresses onto the financial stability framework in South Africa and highlights some key policies that South Africa has put in place to maintain financial stability and anticipate potential financial risk.

2. Literature Review

2.1. Rationale of Financial Stability

Financial stability refers to a financial system that is resilient to systemic shocks, facilitates efficient financial intermediation and mitigates the macroeconomic costs of disruptions in such a way that confidence in the system is maintained (SARB, 2015).
Financial stability is the efficient allocation of economic resources through smooth savings and investment processes that enhance economic growth (Schinasi, 2011). Financial stability is affected by both exogenous and endogenous factors. Shocks and surprises are not the only components that pose a threat to the financial system, also disorderly adjustment of imbalances can cause financial instability. For example, there could be a misperception of expectation of future returns that could subsequently miss-price future price (Schinasi, 2011). Inefficient allocation of capital and mispricing of risk can cause vulnerabilities and imbalances thus threaten financial stability (Peukert, 2010). Financial stability is to protect the economy from financial crises and enabling a financial system so that it limits and addresses emergence of imbalances before they constitute a threat to stability. This may be received by self-corrective, market disciplining mechanisms that can create resilience and that can endogenously prevent development of system-wide risk (Peukert, 2010). Forces are allowed to resolve potential problems but there is room for intervention through liquidity injections.
A *financial system* is a system that allows the transfer of money through the savers to investors. The financial system comprises of three broad closely related concepts (Schinasi, 2011). These are financial intermediaries, financial markets, and the financial infrastructure. Financial intermediaries are financial institutes that pool funds and reallocate funds for different uses. Financial institutions are not simply limited to banking services; they include a variety of institutes, such as, hedge funds, pension funds, non-financial hybrids, that provide a range of different services. Financial markets are markets that directly serve investors and savers through the direct buying and selling of equities and bonds. Finally, the financial infrastructure, comprises of clearance, payments, and settlement systems, and regulatory, supervisory and surveillance infrastructure (Schinasi, 2011). Furthermore, private, and public persons who participate in the financial market are an essential part of the financial infrastructure (Allen and Wood, 2006). The key concepts identified here are important to grasp and monitor their activities for understanding how well a financial system works and how well they are performing.
Systemic risk is the threat of a possible collapse of the financial system; it is a risk of an event that may cause a loss of real economic value or confidence such that it may have some serious adverse effects on the economy (Taylor, 2010). Systemic risk may be an event that arise suddenly and unexpectedly, or it could be built up over time due to inappropriate

policy responses (Taylor, 2010). Real economic effect of systemic risk mainly emerges from disruption to payment systems, credit flows and through destructions of asset values (Taylor, 2010).

To prevent potential problems from materializing a *financial stability framework* requires a continuous process of monitoring and information gathering on macroeconomic conditions, financial markets, financial institutes, and financial infrastructure (Silva et al., 2017). As, the real economy is linked to the financial system (Schinasi, 2011). The process will be more useful and successful if there is a linkage between economic and financial dimensions. The framework involves a continuous process of gathering information, monitoring and assessment (Silva et al., 2017). The process requires a comprehensive and analytical approach. There is a need to develop measurement technique for detecting growing imbalances and calibrating risk and vulnerabilities to keep up to par with important monitoring phases (Silva et al., 2017). The approach also involves the process of supervision, surveillance, and regulation of financial and economic actors. Supervisory processes could be enhanced through the knowledge about the economy's position in the business and credit cycle and the overall performance of markets. The reason for this is that the macro economy and the market provide the background to which performance of individual institutes should be assessed. Finally, the purpose of information gathering is to assess if the financial system is performing its main functions well enough to be within the corridor of financial stability (Silva et al., 2017).

2.2. Financial Stability Policies in South Africa

Now that key components that comprehensively described financial stability are realized, the next step towards this research is to look at some of the policies implemented after 2008 to attain financial stability. To complement these policies the financial stability mandate in South Africa was assessed. This section looks at some policies that the SARB has implemented to achieve financial soundness and then makes use of empirical work, by constructing and evaluating the financial stress index to measure and assess financial stability in South Africa. The empirical work will serve as a guide to see how the new mandate is implemented thus far and investigate whether the FSI is an efficient tool to measure financial stability.

The passing of the Bank Amendment Act legislature was attempting to conform to international standards and best practices. The bill follows the International Monitory Fund (IMF) recommendations for the improvement of financial stability in SA (SARB, 2015). As suggested in the Financial Sector Assessment Program (FSAP) the bill dictated that the power of the curator of the bank should be clarified. It also recognizes that to achieve the FSP objectives fixing banks' problems speedily is critical in minimizing the loss of confidence in the banking sector. The Bill thus realizes the importance of guarding the economy against the economic cost associated with bank failure (SARB, 2015).

The National Credit Act that was initially passed in 2005 sets out of which the legal framework for the extension of credit (SARB, 2015). The legislature relies upon two pillars the first is to ensure the provision of credit on a sustainable basis and the other is to restrict unaffordable credit lending. In January, the Act was revised, and the National Credit Regulator (NCR) suggested guidelines for interpretation and implementation of this law, attention was given to the implementation and application of the duplum rule in this Act. The initial duplum rule limits the accumulation of interest to the principal debt amount. The idea of the initial duplum rule was to protect borrowers from potential exploitation by creditors who may allow relentless accumulation of interest (SARB, 2015). The new proposal to enhance this law is to maintain the original duplum rule but additionally mandate clarity on the rules in distinct ways for agreement regarded by the NCA. Hence, the law is applied more broadly and extensively to other creditor agencies like debt counsellors, debt collectors, and payment distribution agents (SARB, 2015). These creditors are also mandated to limit interest accumulation to the principal amount of debt. The essence of this is to provide greater consumer protection and to make creditors vary about their risk so they could enforce their rights in a meticulous manner.

Since the global financial crisis of 2008, there has been a greater need for reforms in the hedge fund sector as shadow banking was a contributor to the crisis. South Africa, to be consistent with global standards has embarked on a process to expand the scope of regulations and oversights upon hedge funds (SARB, 2015). In the 2015 budget speech, the minister of finance announced that hedge fund businesses would be regarded as a collective investment scheme. To be consistent with international best practices retail and quantified hedge funds are to be regulated, however greater emphasis is given to the tightening of regulation on retail hedge funds to protect consumers. The proposal of regulation in both types of hedge funds allocates duties of managers, they are responsible for advantage, liquidity, collateral, and monthly reporting to the Registrar of Collective Investment Schemes (SARB, 2015). Additionally, one of the critical aspects of this scheme is the disclosure of information to investors and stipulates exposure limits for permitted asset classes. The practices behind this proposal will ensure oversight of these institutes and guard against any systemic risk formation in the financial sector.

Unlike the United States which took serious actions upon financial stability only after the financial crisis of 2008, South Africa had already made plans to implement a financial stability mandate in 2007 (National Treasury, 2014). The mandate currently was still at its infancy stage but was able to somewhat protect the economy from the wrath of the global financial meltdown. The lessons learned from the crisis of 2008 were extended to the financial regulatory regime, which further developed the initial financial mandate by 2009. The work culminated with the release of the policy document, “a safer financial sector to serve South Africa better”, in 2011 (National Treasury, 2014). This marked the need for assessing the structures and characteristics of the South African financial sector to detect gaps and weaknesses and take necessary measures to reform the regulatory system in the financial sector. From the assessment, it was realized that although the financial sector was resilient to the financial crises of 2008 there was a need to strengthen regulation in the financial sector. South Africa in line with international best practices decided to implement the twin peaks model.

The twin peaks model was already implemented by Europe and Australia and is sought as a comprehensive and complete system for financial sector regulation (National Treasury, 2014). The model aims to protect financial customers and the economy by safeguarding funds and ensuring that they are protected against the risk of institutional failure in the financial sector. The name twin peaks come from the nature of the framework that has two objectives first, to strengthen the approach to market conduct regulation, and second to create a more resilient financial system that gives equal attention to prudential and market conduct supervision. This is achieved by allocating dedicated authorities responsible for each of the objectives; in this case, the two goals are split between the central bank and the Financial Stability Board (FSB) in South Africa.

The financial stability framework allocates the central bank a leading role in financial stability by becoming the systemic regulator for the South African financial system (FRRSC, 2013). For instance, the bank is a systemic regulator who overseas systemic risk that may arise from financial infrastructure. The reason for allocating this role to the central bank is its accessibility to emergency liquidity and the ability to respond to macroeconomic development. On the other hand, the Financial Service Board (FSB) in South Africa holds accountability for the supervision of non-bank financial institutions, security market activities, and the national credit regulation, to regulate consumer credit by all credit providers (FRRSC, 2013). The key financial market infrastructure is decided by the central bank whereas the FSB is the market conduct regulator with limited prudential regulation responsibility (National Treasury, 2014). Essentially, to prevent potential problems from materializing a financial stability framework requires a continuous process of monitoring and information gathering on macroeconomic conditions, financial markets, financial institutes, and financial infrastructure to predict and assess risk.

3. Methodology

3.1. Financial Stress indicator

Culminating the effectiveness of the policies proposed by South African policy makers relies on how the financial stress index (FSI) reads. The FSI is an essential tool to gather information on macro-economic conditions, financial markets, financial instruments, and financial infrastructure to predict and assess risk is the financial stress indicator or index (FSI). One of the policy tools the SARB recognized to adhere to financial stability is the use of a financial stress index to detect possible stress in the financial sector (SARB, 2015). The financial stability index in South Africa makes use of five broad indicators as a base to create an index to quantify vulnerability in the financial system. The index on its own is recognized to be an inadequate tool to guard against financial stability; however, it is an efficient measure for policy makers to analyse developments in the financial stress in various parts of the financial system. The FSI is recognized as being a good single indicator to forecast stability (SARB, 2015). A consistently high financial stability index suggests a deterioration of financial stability in the financial sector. Currently there are various indicators used to construct the financial index worldwide, however, the indicators adapted by South Africa to create the financial stability index are derived from financial markets that are sought to be an important source of bank lending. These indicators include the market for credit, funding, equity, foreign exchange, and real estate.

3.2. Estimating the Financial Stability Indicator for South Africa

Creating a financial stress index involves many methodological choices; however, the FSI in South Africa is formulated as an aggregated index that involves a two-level construction (SARB, 2015). The first is the normalization of data, and the second is the processes that make use of weightings across indicators. The first dilemma is to choose an appropriate method to attach weightings to the data collected. The choice is then between using economic analysis to attach weightings to the variables in the index or making use of equal weightings. The disparity between the two methods was small and therefore, for this research, the equal weighting method is used. To aggregate the variables into a single index it is necessary to normalize each indicator. This is to transform variables to eliminate disparity in units of measurement among variables as well as indexing with respect to a tranquil period (SARB, 2015). The method of normalization used for this paper is empirical normalization. This method transforms values of data collected to range from 0 to 1, where 1 represent the weakest value of the indicator. The formula used for normalization is:

$$Z_{i,j} = \frac{x_{i,j} - min_j(x_{i,j})}{max_j\ (x_{i,j} - \ min_j[x_{i,j}])} \qquad (1)$$

, where $x_{i,j}$ is the value of the indicator in the tranquil time in question and $max(x_{i,j})$ and $min(x_{i,j})$ represent the respective worst and best values of each indicator. Finally, $Z_{i,j}$ represents the normalized value of the indicator.
The next step is to identify the various variables needed to form this index. An average financial stability index used in South Africa makes use of 11 indicators, however in this paper 9 indicators were used because of inadequacy of data encountered in the research. The different indicators aim to realize different dimensions of financial stability. These

indicators are divided into four subgroups as depicted in *Table 1*. The subgroups are the Funding, Equity, Foreign exchange, and real estate markets.

Table 1. Financial Stress Variables

Markets	**Variables**	**Comment**
Funding	1. Government Bond Spread 2. Interbank liquidity spread 3. Cost of Borrowing 4. Treasury Yield Spread	• The 10-year non-government bonds yield (OTHI) less government bond yield (GOVI) • JIBAR less yields on 3-month Treasury bills (TBs) • Repo less the yields on 3- month TBs • Moving average of 3-month TBs minus yield on 10-year bonds
Equity	1. CMAX60: All-share Index	• The extent to which the All-share Index has dropped over a year before
Foreign Exchange	1. US dollar/rand volatility index 2. Euro/rand volatility index 3. Sovereign bond spread	• Uncertainty in value of rand relative to US Dollars • Uncertainty in value of rand relative to euro • South African bond yield minus US bond yield
Real Estate	1. CMAX: ABSA House Price Index	• The extent to which property prices in the real ABSA House Price Index have deteriorated in the past year

Source: SARB, 2015

The sub-group funding serves to measure financial vulnerability. In this sub-group, government bond spread, interbank liquidity spread, cost of borrowing, and Treasury yield spread are included. The interbank liquidity spread tries to explain the estimated risk that banks pose to each other. Briefly, this subgroup measures financial volatility. The next subgroup is Equity; a standard equity subgroup holds the all-share index and the volatility index (VIX). This research tried to make use of data that was before, during, and after the crises. However, as the collection of data for the volatility index in South Africa only began in 2008, the volatility index indicator was not included. The All-share index was thus used as a proxy to describe the equity sector in SA. The reason why the all-share index is considered a financial stability variable in South Africa is that there is volatility in share prices, and it is important to realize that this volatility does not become systemic. The next subgroup is the foreign exchange; this is a macroeconomic indicator, which measures the volatility of the rand. Included in this sub-group are three indicators, the US dollar/rand volatility index, Euro/Rand volatility index, and the sovereign bond spread. Briefly this subgroup realizes the impact of international factors on financial stability. Finally, the last subgroup is real estate. The sub-group real estate measures the volatility in tangible assets. On average, this subgroup holds indicators like Amalgamated Banks of South Africa (ABSA) house price index and the commercial real property price index. Due to inadequacy of data, this research paper only looks at the ABSA house price index and uses it as a proxy of the real estate. The purpose of including the real estate sector in the development of the FSI in South Africa has not been explicitly explained by the reserve bank, however if one reads between the lines the real estate sector might have been added because it played a significant role in the global crisis of 2008.

The variables in *Table 1* are normalized during the construction of the FSI. The normalized indicators were then split into their respective subgroups. Equation (2) to (5) explains how each indicator was combined into their respective subgroup.

$$Funding, F_j = \frac{\sum_{i=1}^{4} F_{ij}}{4} \qquad (2)$$

$$Equity, E_j = \frac{\sum_{i=1}^{1} E_{ij}}{1} \qquad (3)$$

$$Foreign\ Exchange, FX_j = \frac{\sum_{i=1}^{3} FX_{ij}}{4} \qquad (4)$$

$$Real\ Estate, R_j = \frac{\sum_{i=1}^{1} R_{ij}}{5} \qquad (5)$$

Finally, to get the financial stress index the equations (2) to (5) are combined into one equation and the method of equal weights are applied and assigned to each indicator and the sub indicators are weighted, respectively. The weighted sub-index is combined, and their sum is divided by the number of indicators used in the research. This equation is represented below:

$$Financial\ Stress\ Indicator = \frac{4F_j + 1E_j + 3FX_j + 1R_j}{9} \qquad (6)$$

The number of indicators in constructing the FSI influence the sub-group weightings. Reflecting on equation (6) the Funding subsection is the heavily weighted subsection. It could be assumed that this is the most important subgroup with regards to financial stability in South Africa. The Foreign subsection received the second highest weightings. Finally, the Real Estate and Equity received equal weightings. Essentially the weightings of each subsection reflect which subgroup is riskier. Therefore, the sub-group with the highest number of indicators has greater impact in the determination of the composite index.

4. Findings

4.1. Construction of Financial Stress Indicator from 2006 to 2015

The data collection process is carried out by making use of databases like Thomson DataStream and McGregor. The data collected is then used in the construction of the financial stress indicator (FSI). In this paper, the FSI is constructed using quarterly data from March 2006 (quarter one) through December 2015 (quarter four). Therefore, the data was collected over the period of 10 years. The FSI constructed during this time periods closely tracks financial stability in the South African Banking sector. By analysing *Figure 1*, one will realize that the financial stress indicator correlates with the financial crisis. In *Figure 1* the periods from 2006 through 2007, the financial stability index was low, but steadily rising. In 2008 there was a sharp rise in FSI that reached its peak in quarter one of 2009, thus the time when the financial crisis occurred. The policies implemented by South African policy makers started to gain momentum and the FSI started to fall. By the first quarter of 2010, the FSI was stable through quarter three of 2013. Finally, by 2014 through 2015 quarter two the level of stress started to rise.

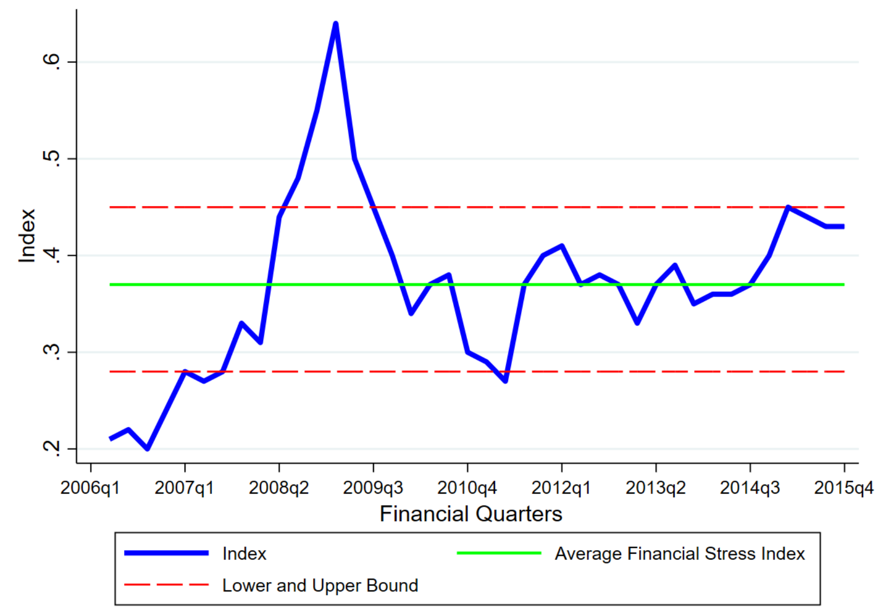

Figure 1. Aggregate Financial Stress Index for South Africa, 2006-2015
Source: Author's analysis/processing based on own data

4.2. Interpretation of Results

To get a deeper understanding of what this all means, the research moves on to find a mean for the FSI. A mean was derived for the indicator. It was found that the mean value of the indicators was 0.37. The FSI is mean reverting and therefore the stress levels above or below the mean are of greater concern. Reflected in *Figure 1*, the South African Reserve Bank was able to mostly, keep the FSI on its mean, holding the period of the crisis's constant. With reference to *Figure 1*, it appears that from 2010 to 2013 SARB was able to somewhat keep the economy at its mean FSI and thus the economy was stable during this period. From 2014 onwards the FSI deviated from its mean, this might be a concern for South African policy makers. This deviation of the FSI from the mean suggests a departure from the expected value.

This research took an additional step in the construction of the FSI and to get better comparisons proposed and added a band, an upper and a lower limit for the financial stress index. A standard financial stress index does not hold such boundaries. This was a suggestion that this research makes to detect a range at which the financial system is allowed to fluctuate, without posing a serious problem to financial stability. To find the band, the research found the standard deviation of the data. From such a calculation, the standard deviation is realized to be at 0.08. The figure derived from the standard deviation is added to the mean FSI value to get an upper bound and to get the value of the lower bound the standard deviation is subtracted from the mean FSI value. The value of the upper bound is thus 0.45 and the lower bound value is 0.28. Holding this band, the FSI for South Africa form the year 2010 to 2015 is stable, as it is within the created band. The purpose of the band is that in a financial system, fluctuations are not always seen as something bad, that is, the financial system, as identified in the problem statement does not necessarily have to be in equilibrium as it can vary. Thus, the financial system may only be in a serious problem if the FSI was below or above the bound and therefore signal for potential risk.

5. Conclusion

It was realized that the two major financial events, that is, the Great Depression and the 2008 Financial Crises were a consequence of unscrupulous behaviour of financial institutes (Gospodarchuk and Suchkova, 2019). This kind of behaviour was tolerated merely because there were no regulations in place to contain the financial system or any tools to measure financial stability. To support this claim, it was found that the United States remained calm and stable in the financial sector when there was regulatory legislature in place to guide the financial system. Once these regulations were removed the economy, for example, moved towards destabilization and ultimately experienced a collapse of the financial system in 2008. It was the global financial meltdown of 2008 in the United States that surged a need for financial regulation and measurement of financial stability worldwide. Considering these developments, the South African policymakers enhanced its policies with financial stability tools in response to the 2008 global financial crisis. From developing a financial framework called the twin peak model, the financial stress index became a comprehensive tool that measure and monitor financial stability. The index includes indicators that capture different dimensions of the banking sector. The findings from the index contribute to the understanding of financial stability and how it is measured. This study found that the volatility of the financial stress index can be useful in identifying potential risk emanating from the financial markets. The empirical results show that, in response to the global financial crisis of 2008, financial stability policies of South Africa were effective during the sample period until 2015 because the index was within the band created in this research. It may be fairly concluded that the new direction in implementation of financial stability policy is a progressive path that South Africa has taken and has allowed the South African Reserve Bank to scientifically track the stability of the financial system.

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Bio-note

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NEW EVIDENCE CONCERNING THE INEQUALITY - FINANCIAL DEVELOPMENT NEXUS IN ROMANIA. A COINTEGRATION APPROACH

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Abstract: *This paper revisits the ambiguous effect of financial development on income inequality in emerging countries by investigating the presence of cointegration between concepts in Romania. Since financial deepening seems to be beneficial in the income-disparities fight in advanced countries, opposite findings are found in the case of less developed or transition ones. Therefore, we employ a time-series model that accounts for inequality, financial deepening and economic growth as the main variables spanning more than 30 years of Romanian history. On average, a higher degree of financial development harms income distribution in the long term, while economic productivity manifests a non-significant influence on inequality. These outcomes are robust to other novel measures of finance that account for the global dimension of financial development: financial institutions, markets and private sector credits. To control for the potential bias of inequality's transmission channels, we include a proxy for inflation in our specification. By capturing the impact of financial expansion on inequality in the presence of inflationary pressure, our results reflect the sensitivity of the low-income groups to this phenomenon. In this regard, policymakers should pay attention to inflation-targeting strategies to support the condition of poor individuals who often cannot take advantage of the benefits of financial development.*

Keywords: financial development, inequality, inflation, cointegration, Romania

JEL classification: D63, E44, F43, P24.

1. Introduction

The relationship between financial development and income inequality has been extensively studied over the past decades, with researchers arguing for mixed empirical outcomes. One strand of literature claims that reducing financial market imperfections can efficiently diminish the inequality in income distribution (Galor and Moav, 2004; Braun et al., 2019). Moreover, financial deepening can improve capital allocation and foster economic growth in the long run (Thornton and Di Tommaso, 2019). In contrast, some authors argue for the existence of a non-linear connection between inequality and finance, in the form of an inverted U shape, supporting the idea that the impact of financial deepening on inequality depends on the level of economic development of a certain country (Greenwood and Jovanovic, 1990; Law et al., 2014). Another bulk of the literature shows evidence of a positive finance-inequality nexus, implying that a higher degree of financial openness may boost inequality among the population (Dabla-Norris et al., 2015; de Haan and Sturm, 2017).

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Therefore, the aim of this study is to investigate the financial development-income inequality linkage in Romania over the period 1990-2021 due to these conflicting outcomes in both developed and emerging economies and, more importantly, the scarce empirical literature focusing on the countries from East-Central Europe. By drawing upon cointegration techniques on large annual time-series data (i.e. 32 years), our findings support the existence of a direct equilibrium relationship between finance and income inequality in Romania. In other words, our results align with the branch of studies that argues for a positive finance-inequality association that seems to be common in emerging and less developed countries. The results obtained are robust to other financial indicators but sensitive to the influence of inflation at different levels of income distribution. This implies that inequality is fostered by disequilibrium in three dimensions: institutions, markets, and private sector credits. From another perspective, we find that inflation negatively and significantly affects income inequality at the aggregated level, arguing for the resources transfer effect of inflationary phenomena (Albanesi, 2006; Coibion et al., 2019). When observing the degree of inequality at the bottom deciles of the distribution, inflation tends to enhance the income gap due to the vulnerability of low-income households who usually hold large amounts of currency.

The novelty of our work arises from employing the newly developed financial indicators of the IMF (Svirydzenka, 2016) that cumulatively capture the influence of financial institutions and markets' efficiency on Romania through the Financial Development Index and its components. Moreover, we consider in our analysis the impact of inflation that affects inequality differently depending on the income group, especially poorer individuals.

The following Section briefly reviews the literature on the finance-inequality link. Section 3 describes the approached methodology. The main findings are illustrated in Section 4. Section 5 concludes and offers some policy suggestions.

2. Theoretical background

Several works have tackled the inequality-financial development nexus over time due to the ambiguous results obtained: a positive, negative or non-linear relationship (Greenwood and Jovanic, 1990; Galor and Moav, 2004; Furceri and Loungani, 2015). Financial development has been considered a transmission channel that can enhance economic growth, but its impact on income inequality remains unclear since this connection may be influenced by the cumulative effect of other socioeconomic factors, including human capital, poverty, investments, etc.

On the one hand, it is well known that when financial markets suffer from imperfections, the investment opportunities rely on private incomes and assets, and to obtain a loan, it is necessary to have some disposable capital. According to Aghion et al. (1999), an unequal resource distribution worsens the borrowers' incentives. In this case, low-income individuals have fewer opportunities to invest in human capital (i.e. education and health), implying under-investments and a lower economic growth rate compared to the growth rate of technological progress. It is usually assumed that economic growth is positively correlated with human capital accumulation. Because poor people have difficulties accessing credits to finance their education, a reduction in inequality will stimulate growth. These findings support those of Perotti (1996), who highlights that more equal societies have lower fertility rates and higher investment in education, both of which have been shown to improve economic performance. Additionally, Barro (2000) reports that barriers to accessing credits for the population will reduce the level of investment in human capital in the poor sectors with higher yields. Suppose the quality of the financial markets and institutions will improve as the economy develops. In that case, the negative influence of market imperfections will affect the developing countries rather than the advanced ones. This finding is in line with the idea

that inequality negatively influences economic growth in poor countries and positively in developed economies (Breunig and Majeed, 2020).
On the other hand, most recent studies claim that financial development diminishes inequality in developed states (Madsen, Islam and Doucouliagos, 2017; Jung, Vijverberg, 2019), while the effect seems to be the reverse in emerging and less developed countries (Seven and Coskun, 2016; Kim, Hsieh, and Lin, 2019; Thornton and Di Tomasso, 2019). For instance, by studying a panel of 21 OECD members from 1870-2011, Madsen, Islam and Doucouliagos (2017) argue that the adverse influence of inequality is more severe in financially less developed states with less credit opportunities for the population. Likewise, using spatial econometric techniques, Jung and Vijverberg (2019) show that a higher degree of financial development reduces income inequality in 29 administrative counties in China. Nevertheless, the authors show that access to different banking services, including deposits and loans, does not have a significant impact in reducing inequality. In contrast, Thornton and Di Tommaso (2019) employ panel cointegration methods to investigate the long-term relationship between finance and inequality and use a sample of 119 countries observed from 1980-2015. They find that a higher degree of financial markets development reduces the income gap between individuals, the results being robust to distinct measures of financial development.

3. Methodology and data

To assess the long-term dynamics between income inequality and financial development, we develop the following model:

$$LGINI_t = \beta_0 + \beta_1 LFD_t + \beta_2 LGDP_t + \varepsilon_t, \qquad (1)$$

Where *GINI* is the net Gini coefficient for income inequality (in logs), *FD* represents the Financial Development Index (in logs) recently developed by Svirydzenka (2016) and ε the error term. In line with the work of Kuznets (1955) and Thornton and Di Tommaso (2019), we also include in the model the GDP per capita as a proxy for economic growth (GDP), which has been demonstrated to have a long-run influence on inequality.
As our data contain information from more than 30 years, an appropriate method to tackle the properties of our sample is testing for stationarity. Furthermore, if the hypothesis of non-stationary variables is confirmed, we will further examine the potential existence of a cointegration relationship between them using the ARDL Bound tests (Pesaran et al., 2001). Then, a relevant approach that is suitable to estimate potential short and long-run dynamics represents the ARDL model coined by Pesaran et al. (2001). ARDLs are least squares regressions that contain lags of the response and explanatory variables as regressors. Pesaran et al. (2001) developed an efficient methodology to examine the equilibrium long-run relationship, regardless of whether the regressors are stationary or non-stationary (in the ARDL model, the dependent variable is assumed to be I(1)). In this case, we may appropriately employ the ARDL method, including variables with different integration orders. Therefore, we consider estimating the conditional error correction equation as follows:

$$\Delta LGINI = \alpha_0 + \alpha_1 t + \gamma_0 LGINI_{t-1} + \gamma_1 LFD_{t-1} + \gamma_2 LGDP_{t-1} + \sum_{i=1}^{P} \Theta_i \Delta LGINI_{t-i} + \sum_{j=0}^{q} \Delta LFD_{t-j} + \sum_{l=0}^{n} \Phi_l \Delta LGDP_{t-l} + \mu_i, \qquad (2)$$

Where Δ is the first-order difference operator**.** The first differences of the variables denote how much they vary (i.e. increase or decrease) every year compared to the previous one.
The null hypothesis of a no-cointegrating relationship between GINI and FD is tested as the joint nonsignificance of the parameters of the lagged levels: H_0: $\gamma_0 = \gamma_1 = \ldots = \gamma_n = 0$. If the

calculated F-statistic overpasses the upper bound critical value, we can reject the null hypothesis. Otherwise, we fail to reject H_0 and conclude that cointegration does not exist between variables.

Regarding the data, we focus on annual time-series indicators for Romania spanning the period 1990-2021. Data for income inequality is collected from the World Inequality Database, accessed in July 2023, and is represented by the post-taxes Gini coefficient. The real GDP per capita (PPP) is taken from the World Bank's database, while the level of financial development is captured by a novel aggregate index constructed by the IMF: the Financial Development Index comprising financial institutions and markets dimensions (Svirydzenka, 2016). For complexity purposes, we employ three other measures of finance, namely the above-mentioned sub-indices of the Financial Development Index (i.e. the Financial Institutions and Markets Indexes) and the banks' credits to the private sector ratio as % of GDP. The description and source for the variables used in the analysis are provided in Table 1A in the Appendix. All variables are transformed in logs to control for heteroskedasticity and normalize data, except the inflation proxy.

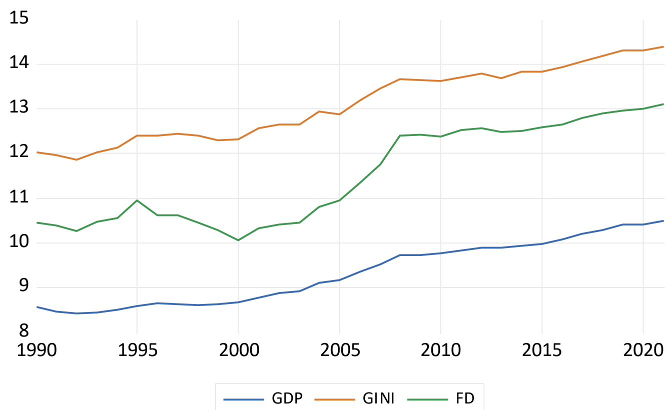

Figure 1. Evolution of inequality, financial development and economic growth
Source: Author's analysis in Eviews 13

From a graphical point of view, Figure 1 indicates that all variables pattern a mostly upward trend between 1990 and 2021, suggesting similar dynamics over time. This preliminary analysis denotes the presence of a long-run path between financial development, income inequality and economic growth. Summary statistics are presented below (Table 1).

Table 1. Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min.	Max.
GDP	32	9.332	0.705	8.415	10.499
GINI	32	3.781	0.137	3.446	3.944
FD	32	-1.598	0.363	-2.254	-1.176
FI	32	-1.245	0.524	-2.237	-0.677
FM	32	-2.477	0.503	-3.147	-1.651
PRIVC	27	3.076	0.612	1.964	4.379
INFL	32	40.897	67.368	-1.500	256.100
BOT50	32	2.916	0.172	2.696	3.373

Source: Author's analysis in Eviews 13

4. Results

According to Tables 2, 3 and 4, our results suggest that the majority of our variables are I(1), i.e. integrated of order 1, implying that they are stationary in first-difference form. However, the performed tests for private bank credits (% GDP) and inflation proxies show mixed results, reinforcing the validity of the chosen methodology. On the other hand, given the pattern of the financial indicators' graphs, we may expect potential structural breaks in the time series data. According to Caporale and Grier (2000) and Lazăr and Denuit (2011), among others, the common unit root tests can be biased by the existence of unexpected changes in parameters. Also, the empirical literature often finds structural changes in financial series (Andreou and Ghysels, 2009). In this regard, we employ the Zivot and Andrews (1992) test and claim that FD is non-stationary with a breakpoint in 2013, corresponding to the national market's reaction to the undertaken changes in the United States monetary policy regime. The same tests are conducted for the other financial indicators: FI and FM seem to be stationary in level with one structural break.

Table 2. Unit root tests (levels)

Test / Variab.	ADF H_0: Unit root		ERS H_0: Unit root		PP H_0: Unit root		KPSS H_0: Stationarity		Zivot-Andrews test
	int	int&trend	int	int&trend	int	int&trend	int	int&trend	int&trend
GINI	-2.470	-2.899	-1.390	-2.733	-2.499	-2.782	0.617**	0.142**	
GDP	1.309	-2.026	-0.494	-1.737	0.908	-3.040	0.727**	0.118**	
FD	-1.536	-3.654	-1.588	-2.138	-1.245	-1.708	0.350*	0.120*	-4.038 (2013)
FI	-0.689	-1.715	-0.702	-1.521	-0.900	-1.881	-0.500*	0.110	-2.803** (2005)
FM	-1.671	-1.712	-1.412	-1.818	-1.791	-1.789	0.412*	0.127	-5.404** (2000)
PRIVC	-1.896	-1.312	-0.973	-1.368	-1.312	-1.023	0.155	0.102	
BOT50	-2.934	-2.437	-0.974	-1.521	-3.058**	-2.437	0.442	0.178**	
INFL	-7.553***	-5.025***	-0.366	-0.592	-2.288	-3.980**	0.535**	0.159**	

Source: Author's analysis in Eviews 13

Table3. Unit root tests (first-differences)

Test / Variab.	ADF H_0: Unit root	ERS H_0: Unit root	PP H_0: Unit root	KPSS H_0: Stationarity
	intercept	intercept	intercept	intercept
ΔGINI	-6.857***	-6.943***	-6.770***	0.164
ΔGDP	-3.928***	-1.895*	-3.908***	0.313
ΔFD	-4.446***	-4.523***	-4.600***	0.134
ΔFI	-4.587***	-4.661***	-4.572***	0.153

Source: Author's analysis in Eviews 13

Table 4. Unit root tests (first-differences)

Test / Variab.	ADF H_0: Unit root	ERS H_0: Unit root	PP H_0: Unit root	KPSS H_0: Stationarity
	intercept	intercept	intercept	intercept
ΔFM	-5.296***	-5.384***	-5.293***	0.107
ΔPRIVC	-2.764*	-2.576**	-2.726*	0.193
ΔBOT50	-6.667***	-6.146***	-6.664***	0.405
ΔINFL	-4.510***	-0.876	-8.551***	0.500

Source: Author's analysis in Eviews 13

We then employ the ARDL Bound test to verify the existence of the cointegration relationship. The outcomes denote that the null is rejected in favour of the alternative H_1 since the calculated F-statistic surpasses the upper critical value at the 1% significance level (see Table 5). Therefore, our variables have the same dynamics over time, i.e. they are cointegrated.

Table 5. ARDL Bound Tests

Dependent variable: GINI Null hypothesis: No relationship (in levels)				
Test statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
F-statistic	13.079	10%	3.17	4.14
Number of parameters (k)	2	5%	3.79	4.85
		2.5%	4.41	5.52
		1%	5.15	6.36

Source: Author's analysis in Eviews 13

Further, our objective is to investigate short- and long-term dynamics between income inequality, financial development and economic growth. The appropriate lag lengths for the ARDL (p_0, p_1, p_2) component of the equation are selected using the Akaike Information Criterion (AIC). In our case, the optimal estimated model is the ARDL (1, 4, 3) specification for the short-run dynamics. The short- and long-run relationships are presented below (Tables 6 and 7).

Table 6. ARDL (1, 4, 3) long-term coefficients

Variable	**Coeff.**	**Std. error**	**t-Statistic**	**Prob.**
Dependent variable: GINI				
GDP	-0.005	0.018	-0.286	0.778
FD	0.154***	0.030	5.150	0.000

Source: Author's analysis in Eviews 13

Table 7. ARDL Error correction model (ECM) – short-term dynamics

Variable	**Coeff.**	**Std. error**	**t-Statistic**	**Prob.**
ECM(-1)	-1.130***	0.171	-6.620	0.000
∆GDP	0.437**	0.167	2.616	0.018
∆GDP(-1)	0.372*	0.187	1.996	0.062
∆GDP(-2)	0.612***	0.188	3.254	0.005
∆GDP(-3)	0.560***	0.179	3.134	0.006
∆FD	0.115	0.087	1.328	0.202
∆FD(-1)	-0.198**	0.079	-2.497	0.023
∆FD(-2)	-0.223**	0.082	-2.703	0.015
Constant	4.516***	0.687	6.573	0.000
R^2	0.782			
Adj. R^2	0.706			
Log likelihood	54.441			
F-statistic	8.544			
Prob(F-statistic)	0.000			
Durbin-Watson statistic	2.279			

Notes: The dependent variable is the ∆GINI.
Source: Author's analysis in Eviews 13

As shown above, the long-run level relationship between GINI and (GDP, FD) is estimated by: $GINI_t = 0.154FD_t - 0.005GDP_t,$ *(3)*

And it indicates that, in the long-term, one percentage increase in the GDP leads to a decrease of 0.005% in the Gini coefficient, assuming a negative but insignificant influence of economic growth on income inequality. In contrast, the results point out a positive and significant connection between inequality and financial development, arguing that increases in the development of financial institutions will trigger future increases in the degree of inequality by 0.154%. Similar outcomes are found by Tiwari, Shahbaz, and Islam (2013) and Cetin, Demir and Saygin (2021) in the case of India and Turkey, respectively. By including the lagged residual term in the short-run equation, we highlight how the Gini index adjusts in the short-run to the disequilibrium in the long-run.

4.1. Postestimation stability tests

Several stability tests concerning homogeneity, serial correlation, heteroskedasticity, and non-linearity were conducted to check the stability of the chosen ARDL (1, 4, 3) model. According to Table 8, the residuals are normally distributed and homogeneous and do not pattern serial correlation up to the 7th lag. Likewise, the performed cumulative sum of recursive residuals (CUSUM) and cumulative sum of the squares recursive residuals (CUSUMSQ) confirm the stability of our specification, testing for structural breaks in the residuals. Since the cumulative sum lies between the critical confidence interval bounds, we cannot reject the null hypothesis and claim that the predicted model accurately fits the data (Figures 2 and 3).

Table 8. Postestimation tests

Diagnostic Tests		
Jarque-Bera normality test	JB: 1.189	Prob.: 0.552
Breusch-Godfrey Serial Correlation Lagrange Multiplier test (7)	F-statistic: 1.124	Prob.F(7,10): 0.419
	Obs.*R-squared: 12.331	Prob.Chi-Square(7): 0.090
Breusch-Pagan-Godfrey Heteroskedasticity test	F-statistic: 0.800	Prob.F(10,17): 0.631
	Obs.*R-squared: 8.964	Prob.Chi-Square (10): 0.536
ARCH test (7)	F-statistic: 0.871	Prob.F(1, 25): 0.360
	Obs.*R-squared: 0.909	Prob.Chi-Square(1): 0.340
Ramsey RESET Test (1)	F-statistic: 3.460	Prob.: 0.081

Source: Author's analysis in Eviews 13

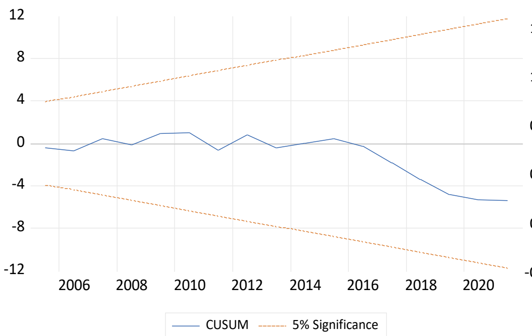

Figure 2. CUSUM graph
Source: Author's analysis in Eviews 13

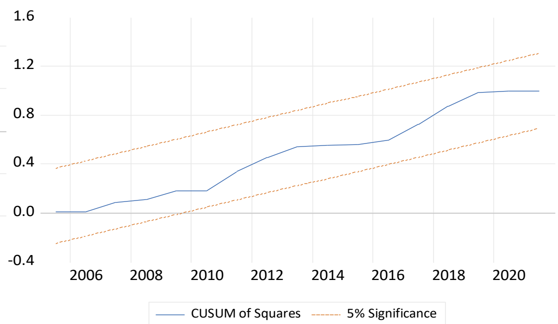

Figure 3. CUSUMSQ graph
Source: Author's analysis in Eviews 13

4.2. Robustness checks

On the other hand, another aspect that should be considered is the impact of inflation on our proposed equation. Given that high inflation rates may affect financial markets' stability, we include it in the model to control for the potential bias of omitted variables. In the same vein, the inflation-inequality nexus has been widely debated in the literature mainly due to its detrimental effect on the poorer individuals from the bottom deciles who tend to hold large shares of their income as currency, being the most exposed to inflationary phenomena (Albanesi, 2006; Coibion et al. 2019). The main results do not change in the presence of this additional factor, but we observe that, in the presence of inflation, one percentage increase in financial development leads to a higher increase in the inequality level compared to the baseline model (Table 9). Also, inflation significantly and negatively influences inequality in the long run, while the GDP's coefficient turns significant at the 5% significance level. These findings are in line with the work of Jin (2009), who argues for an inverse connection between inflation and inequality when capital heterogeneity is persistent.

Table 9. Long-run estimates (inflation proxy)

Variable	Coeff.	Std. error	t-Statistic	Prob.
Dependent variable: GINI				
GDP	-0.074**	0.031	-2.416	0.033
FD	0.249***	0.066	3.766	0.003
INFL	-0.0004***	0.0001	-3.472	0.005
Constant	4.832***	0.357	13.525	0.000

Source: Author's analysis in Eviews 13

To test our estimates' robustness, we change the measure of income inequality with another alternative, namely the bottom 50% of the population whose income falls below the median (Table 10, column 1(a)). In this manner, we also check the sensitivity of different income groups to inflation, testing the theory that inflationary pressure is more harmful to low-income individuals (Table 10, column 1(b)). As shown below, we notice that, in both models, financial development continues to significantly increment inequality in the long-term. Likewise, our results support the theory that inflation negatively influences the income distribution at the bottom deciles.

Table10. Long-run estimates (bottom 50%)

Variable	1(a)	1(b)
Dependent variable: BOT50	**ARDL (1, 2, 1)**	**ARDL (1, 0, 3, 0)**
GDP	-0.104** (0.047)	-0.004 (0.024)
FD	0.199** (0.080)	0.085** (0.035)
INFL	-	0.001*** (0.0001)
Constant	4.249*** (0.557)	3.081*** (0.278)

Source: Author's analysis in Eviews 13

From another perspective, we explore the impact of other financial indicators on income inequality, namely the sub-components Financial Institutions Index *(FI)* and Financial Markets Index *(FM),* and the commonly used banks' credit to the private sector ratio as % GDP *(PRIVC).* The FI and FM indicators are employed to assess the effect of institutions' and markets' development on income distribution individually to better explain the role of these key financial factors. On the one hand, the FI index captures the cumulative influence of institutions' depth, accessibility, and efficiency, while on the other hand, the FM measure emphasizes the markets' background (Svirydzenka, 2016). These findings are reported in Table 11. In all situations, financial development acts as a contributor to Romania's long-term increases in the degree of inequality. This suggests that income inequality is fostered by disequilibrium in three dimensions: institutions, markets, and private sector credits. In contrast, GDP positively and significantly influences inequality in Eq. 1(b), suggesting that higher economic performance augments the disparity in income distribution over time. In conjunction with institutions' efficiency and private sector credit proxies, the GDP has no long-run relationship with the Gini coefficient.

Table 11. Long-run estimates (other financial indicators)

Variable	1(a)	1(b)	1(c)
Dependent variable: GINI	**ARDL (1, 4, 3)**	**ARDL (1, 3, 2)**	**ARDL (1, 4, 3)**
GDP	-0.003 (0.027)	0.102*** (0.020)	0.025 (0.024)
FI	0.094** (0.036)	-	-
FM	-	0.100** (0.036)	-
PRIVC	-	-	0.081*** (0.020)
Constant	3.878*** (0.289)	3.009*** (0.176)	3.266*** (0.171)

Source: Author's analysis in Eviews 13

5. Conclusion

By conducting a comprehensive time-series analysis concerning the relationship between financial development and inequality in Romania, we find that a higher level of financial deepening augments income inequality in the long term, arguing for an adverse effect of financial deepening in emerging countries. Concerning economic growth, the GDP per capita seems to have a beneficial but insignificant impact on reducing future inequality. When we individually explore the implications of the financial development in Romania using the recent indicators developed by IMF (Svirydzenka, 2016) that capture the dimension of financial institutions and markets development, our results remain robust, highlighting wider income disparities due to different forms of financial expansion. Given that financial market liberalization manifests a stronger influence on the inequality level than the financial institutions' indicator, we consider it appropriate to pay more attention to the stock market volatility. By supporting financial policies that secure both the stability and efficiency of stock markets, the inequality in income distribution may be significantly alleviated in the long term. From another point of view, our main findings do not change when accounting for additional factors, but we observe that, in the presence of inflation, one percentage increase in financial development triggers a higher increase in inequality compared to the baseline model. Furthermore, we support the detrimental influence of higher inflation rates on income distribution, especially for poor households. Therefore, policymakers should focus on inflation-targeting strategies that may improve the condition of low-income individuals and also reinforce at the national level the benefits of sustainable financial development observed in advanced countries.

One limitation of the current study is that we do not consider the impact of poverty when investigating the finance-inequality nexus. Considering that poor individuals have limited access to credit markets and mostly live in rural areas, expanding the accessibility of financial services for this particular group may be advantageous over time. Additionally, the negative effect of inflation on the lower-income class questions for further research on the poverty topic. It would be relevant for financial expansion reforms to simultaneously assess the degree of domestic poverty to mitigate income discrepancies in Romania.

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Bio-note

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Appendix

Table 1A. Data description and source

Variable	Description	Source
Real GDP per capita (GDP)	The real GDP per capita expressed in PPP (current international USD)	World Development Indicators (WDI): https://databank.worldbank.org/
Gini coefficient (GINI)	The calculated net Gini coefficient after tax collection	World Inequality Database (WID): https://wid.world/data/
Financial Development (FD)	The Financial Development Index developed by the IMF (Svirydzenka, 2016)	International Monetary Fund (IMF) Database: https://data.imf.org/?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b&sid=1480712464593
Financial Institutions (FI)	The Financial Institutions Index developed by the IMF (Svirydzenka, 2016)	International Monetary Fund (IMF) Database: https://data.imf.org/?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b&sid=1480712464593
Financial Markets (FM)	The Financial Markets Index developed by the IMF (Svirydzenka, 2016)	International Monetary Fund (IMF) Database: https://data.imf.org/?sk=f8032e80-b36c-43b1-ac26-493c5b1cd33b&sid=1480712464593
Bank credits to the private sector (PRIVC)	The domestic credits provided by banks to the private sector as % of the GDP	World Development Indicators (WDI): https://databank.worldbank.org/
Bottom 50% (BOT50)	The bottom 50% of the population whose income falls below the median	World Inequality Database (WID): https://wid.world/data/
Inflation rate (INFL)	The inflation rate measured by the consumer prices index (annual %)	World Development Indicators (WDI): https://databank.worldbank.org/

Source: Author’s processing

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ADVERTISING MESSAGES FOR A FINANCIAL SERVICE PROVIDER: CREATION AND ANALYSIS OF THE EFFECTIVENESS

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Abstract: *The paper presents the process of creating and testing three advertising messages in order to select the most effective way to promote a non-banking financial company on a new targeted market represented by online retailers. As a result of a brainstorming session, three concepts were identified for the advertising message: satisfied entrepreneur, future concept, and the playful entrepreneur. Using each concept, three printed advertising messages were created. To test the advertising messages, research was conducted in two steps. The first step involved testing the messages through a quantitative survey based on a questionnaire administered to a sample of 28 employees of the company. This survey evaluated five dimensions of the prints: identification, relevance, capturing attention, intelligibility, and creativity. The second step aimed to test the efficiency of the prints using the Facebook Ads platform, measuring two metrics: CPM (cost per 1,000 impressions) and CTR (link click-through rate). The results of this research indicate that the advertising message based on the concept of the satisfied entrepreneur registered the best response in both testing methods.*

Keywords: advertising testing, creativity in advertising, Facebook Ads testing, financial company advertising.

JEL Classification: M310.

Introduction

The purpose of this paper is to present the process of creating and testing an advertising message to promote a non-banking financial company in a new targeted market represented by online retailers. We presumed that a more creative advertisement will have better results with the audience, according to other scientific studies, and tested it. Additionally, we wanted to highlight the importance of research that can be applied in companies. The research data can be used to make better business decisions, leading to improved business results such as higher sales and profit. The research process consisted of the following steps:

- Conception of advertising messages
- Testing of advertising messages
- Conclusions and recommendations

Many authors highlited the importance of creativity in advertising and conducted empirical researches on it (e.g., Kilgour and Koslow 2009; Johar, Holbrook, and Stern 2001).

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Therefore, we paid special attention to the 'creativity' in our whole process of conception and testing advertising.

1. Literature review

There is a constant debate among practitioners on the value of creativity in the advertising process. Some practitioners argue that creativity, defined as a unique, memorable, out-of-the-ordinary concept, is the success factor for the efficiency of an advertisement, while others support that the success factor of an advertisement is to 'give reasons' for why consumers would buy the promoted product, with or without a 'creative' concept.
As presented in the Introduction section, creativity does not have a unique, commonly accepted definition.
According to Reinartz and Saffert's (2013) study on creativity in advertising, the efficiency of advertising creativity can be measured (Reinartz and Saffert, 2013). Warner Reinartz and Peter Safferd used the Hierarchical Sales Response Model to measure creativity on five dimensions: originality, flexibility, elaboration, synthesis, and artistic value. Eventually, the authors correlated the research results with the sales volume for the promoted products. Conclusions were that 1 Euro invested in the creative ad may double the sales volume compared to 1 Euro invested in a non-creative ad. Yet, the study reflects that the level of creativity has a different influence on sales volume for different types of products. For some products, a higher level of creativity may have a negative impact on sales if consumers want to understand how efficient the product is instead of how creative the ad is.
A similar study, with the purpose of identifying whether creativity counts in advertising (Dahlén et al., 2008), highlighted that the more creative an advertisement is, the higher the ability and quality of the brand were perceived to be, and the higher the interest of respondents was for the brand. The conclusion was that advertising creativity increases consumers’ interest in the brand not by creating a new message but by presenting the same message in a different manner (Dahlén et al., 2008).
(Heath et al. 2009) studied whether emotional creativity increases the level of attention for TV commercials based on an experiment using eye movement study. Results revealed that a high degree of emotional content is associated with a high level of attention; previous exposure to the same commercial led to a lower level of attention only for commercials with a low emotional level; the level of attention was similar for all categories of products (Heath et al., 2009).
(Smith et al. 2007) conducted a study on the determinants and effects of creativity in advertising. The study shows that divergence (the extent to which an advertisement contains new, different, unusual, original, unique elements) is a major indicator of creativity, but its interaction with relevance plays a very important part. The most important variables of divergence are: originality, flexibility, synthesis, elaboration, and artistic value (Smith et al., 2007).
White and Smith (2001) assessed advertising creativity using a specific semantic scale. The results highlighted that professionals, students, and the general public assess advertising differently (White and Smith, 2001).
From the various studies presented on creativity in advertising, we noticed that creativity is an important pillar for success. Yet, the concept incorporates various definitions and meanings. The complexity of the concept is undeniable. It is important that a concept is assessed on all creativity dimensions. Also, it is important to consider the coherence between creativity and the types of products to be promoted.

2. Conception of advertising messages

The purpose of this paper is to present the process of creating and testing an advertising message to promote a non-banking financial company in a new targeted market represented by online retailers (specifically, loans for eCommerce retailers).
The process involved the following steps: conception of advertising messages, testing of advertising messages, conclusions, and recommendations for the company. Each step of the process is explained in this paper.
The entire paper focuses on a particular non-banking financial company from Romania. In 2019, the company intended to enlarge the targeted audience for its offered financial products. In the context of 'digitalization,' the company's objective became to also approach eCommerce companies.
The general target of the company consists of SMEs with 1 to 25 employees and an annual income between 30,000 – 600,000 RON (Romanian currency equivalent to 6,000 – 120,000 Euro). Typically, the client of our company is a family business. As these SMEs present a high risk, they usually cannot access a loan from a bank institution. The typical client has low or medium financial education.
In conclusion, the objective of the company is to gain a new audience that should be specifically approached with proper advertising messages. The potential market is represented by approximately 12,400 companies practicing eCommerce in Romania.
Websites, Facebook, and Instagram pages of various eCommerce companies have been analyzed to identify common features of eCommerce businesses in Romania. The main identified feature was the friendly communication manner with customers. This is why we decided to create advertising materials with a 'friendly communication manner,' so that most eCommerce companies interacting with the advertising message can easily identify themselves with the message and our company.
The method used to identify the main ideas for advertising concepts was brainstorming. The brainstorming was conducted with the company’s front-office employees. They were considered to take part in the brainstorming as they are closer to the company’s clients, and therefore, they understand their business behavior patterns better.
Participants were presented with the purpose of the meeting, informed of the rules and steps of the brainstorming, and asked to imagine what an advert should present to appeal to an eCommerce business client. For 30 minutes, participants were allowed to explore platforms such as Squarespace, Pinterest, and Shutterstock to identify sources of inspiration and potential concepts.
The results of the brainstorming were synthesized into three main advertising ideas. Based on each idea, the graphic designer have created potential advertising messages:
Concept 1: The satisfied entrepreneur - a client practicing eCommerce has a type of business that offers more time management flexibility, more free time, more pleasure with all the work to be done.
Concept 2: Concept of the future – our company is a company that opens new horizons in front of its clients. The idea is that clients should associate our company with an opened door to the digital world, full of opportunities.
Concept 3: The playful entrepreneur – a concept with the purpose to appeal to the audience in order to convince potential clients to look at the message; the image is just a marketing hook.
The concepts are presented below:

Concept 1: The satisfied entrepreneur | Concept 2: Concept of the future | Concept 3: The playful entrepreneur

Figure 1. Concepts

3. Testing of advertising messages - methodological framework

In order to identify the best image for the advertising materials, two different tests were conducted to compare the obtained results and to choose the best one.

The *first test* consisted of image evaluation on five dimensions based on employee interviews. The considered dimensions were:

• *Identification* – to what extent the target finds itself in the created image;
• *Relevance* – to what extent the elements of the advert are significant, useful, and valuable for the consumer (Smith et al., 2007);
• *Captivity* - to what extent the image gains attention;
• *Intelligibility* - to what extent the message is understandable for the audience;
• *Creativity* – a subjective dimension that incorporates elements such as elaboration, artistic value, originality, flexibility, synthesis (Reinartz and Saffert, 2013).

The fifth dimension was first analyzed as 'general creativity' – a holistic approach. After the holistic approach, a separate test was conducted specifically for this fifth dimension to understand the concept as a cumulus of explained elements.

The second test aimed to assess the efficiency of the three images using the Facebook Ads platform. The purpose was to identify which image captures the attention of the target audience best and motivates them to enter the company's site. The performance indicators used were: CPM (cost per 1,000 impressions) – the medium cost per 1,000 impressions - and CTR (link click-through rate) – the ratio between the number of clicks and the number of impressions.

A comparison was made between the results of the two tests to select the best image for business communication purposes.

Test 1 – Employee Interview

The purpose of this test was to assess the three concepts based on the five dimensions presented above.

Method:

The test involved 28 employees in the first step and 30 employees in the second step. For the first step, the interview was conducted based on a guide consisting of five affirmations to assess identification, relevance, captivity, intelligibility, and creativity for each image. Participants assessed each advertising message through affirmations on a scale from 1 to 10, where 1 meant "I don't agree at all", and 10 meant "I totally agree."

For the second step, the same research method was applied to identify how employees rate the creativity dimension only, based on creativity-composing elements: elaboration, artistic value, originality, flexibility, and synthesis. This separate assessment of creativity was conducted as we assumed that creativity is a very subjective concept. This *second part* helped us identify if participants' perceptions of creativity might influence the general assessment results.

Hypotheses:

H_1 - The image for the concept "The Playful Entrepreneur" is the most attractive (the most captivating) due to unusual elements such as the man stepping out of the laptop, facial expressivity, and unusual glasses.
H_2 - The image for the concept "The Satisfied Entrepreneur" is the most relevant, as it clearly presents an important advantage for the targeted audience.
H_3 - The image for the "Concept of the Future" is the most creative due to graphical representation and complex ideas.

Hypotheses were formulated based on conversations with front office employees derived from their observations of the company's clients.

Research Questions:

Q_1 - Does the targeted audience see itself in these images?
Q_2 - Is the image, as a whole, useful for the targeted audience?
Q_3 - Is the message (text) understandable?
Q_4 - Is the image able to capture attention?
Q_5 - Is the image creative from the perspective of the five dimensions?

4. Analysis and results

The data acquired through the utilization of questionnaires underwent processing and was subsequently presented in tabular format to facilitate a more accessible interpretation. Subsequently, we will conduct an analysis of the obtained results and establish correlations between the outcomes of the two tests.

Results and conclusions of the first part of the first test

In this section, an examination will be undertaken to analyze the data derived from Part 1 of Test 1. The ensuing results will be systematically correlated with the formulated hypotheses and research questions.

Table 1. Results of the first test (part 1)

Dimension (first part - test 1) / Image (concept)	Identification	Relevance	Captivity	Intelligibility	Creativity	Average
	7.6	7.6	7.3	6.9	8.4	7.56
	6.2	6.1	5.6	6.1	6.9	6.18
	5.2	5.5	7.0	6.7	6.6	6.2

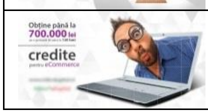
Source: Author's analysis

The conclusions of the first part of the test 1 are as follows:

1. The most captivating concept is not "The Playful Entrepreneur," as expected. This concept has the score of 7.0 and is situated in second place after the concept "The Satisfied Entrepreneur" which has 7.3 score.
2. The concept "The Satisfied Entrepreneur" is considered to be the most relevant (useful); this is confirmed by a score of 7.6, 1.5 higher than the "Concept of the Future" and 2.1 higher than the "Playful Entrepreneur" concept.
3. The "Concept of the Future" is not the most creative concept, as expected. This image had a score of 6.9, 1.5 lower than the image for the concept "The Satisfied Entrepreneur."
4. The general hierarchy of the analyzed concepts is:
I. The Satisfied Entrepreneur – average rating of 7.56 on the five dimensions.
II. The Playful Entrepreneur – average rating of 6.20 on the five dimensions.
III. Concept of the Future – average rating of 6.18 on the five dimensions.
In conclusion, the image for the concept of "The Satisfied Entrepreneur" is the best to be used for advertising materials for the intended audience.

Results and conclusions of the second part of the first test
In this section, an examination will be undertaken to analyze the data derived from Part 2 of Test 1. The ensuing results will be systematically correlated with the formulated hypotheses and research questions.

Table 2. Results of the first test (part 2)

Dimension (second part - test 1) / Image (concept)	Elaboration	Artistic value	Originality	Flexibility	Synthesis	Average
	4.7	4.4	4.6	4.9	4.9	4.7
	3.7	3.6	4.4	3.6	3.3	3.72
	4.3	4.3	5.4	4.1	3.9	4.4

Source: Author’s analysis

The result of the second part of test 1 places the concepts as follows:
I. *The satisfied entrepreneur* – average 4.7 on the five dimensions ratings;
II. *The playful entrepreneur* – average 4.4 on the five dimensions ratings;
III. *Concept of the future* – average 3.72 on the five dimensions ratings.

Test 2 – Audience reaction through Facebook Ads
This test consisted of an experiment on the Facebook Ads platform, considering an audience with the following features:

- Geographical area: Bacău, Brăila, Ilfov, Constanța, Dolj, Iași, Argeș, Prahova, and Suceava counties in Romania;
- Age: 25-60;
- Sex: both female and male;
- Occupation: E-Commerce Director;
- Hobbies: anything related to eCommerce;

- Status: entrepreneur.

Based on Facebook algorithms, a 19,000-user audience was created. The next step was to create an A/B test campaign with three images. CPM and CTR were identified and further analyzed.

Hypotheses:

H_1 The image for the concept "The Playful Entrepreneur" will have the least cost per 1,000 impressions (CPM). Facebook algorithms decrease the cost per post if the advert is captivating (challenging users to interact with the image).

H_2 The image for the concept "The Satisfied Entrepreneur" will have the higher ratio between clicks (site visits) and impressions (CTR).

H_3 The image for "Concept of the Future" will have average results.

Research Questions:

Q_1 Is the image sufficiently captivating to challenge the user to click on the image?

Q_2 Is the image efficient from the cost point of view?

Results and Conclusions of the second test

In this section, an examination will be undertaken to analyze the data derived from Test 2. The ensuing results will be systematically correlated with the formulated hypotheses and research questions.

Table 3. Results of test 2

Dimension / Image (concept)	Budget (RON)	Nr. impressions	CPM (RON)	Nr. clicks	CTR
	42.23	3,435	12.29	20	0.58%
	31.93	2,537	12.59	12	0.47%
	23.61	1,891	12.49	10	0.53%

Source: Author's analysis

The following results were identified:

1. The image for the concept "The Playful Entrepreneur" does not have the least CPM. Its CPM is 12.49 RON, which is 0.2 higher than "The Satisfied Entrepreneur."
2. The image for the concept "The Satisfied Entrepreneur" has the highest ratio between the number of clicks and the number of impressions (CTR) at 0.58%, 0.05% higher than the concept "The Playful Entrepreneur" and 0.11% higher than "Concept of the Future."
3. "Concept of the Future" had the smallest CTR and the highest CPM. The results contradict our expectations, as it does not have average results, but the lowest performance compared to the other adverts.

The image for the concept "The Satisfied Entrepreneur" had the best results, with a CTR of 0.58% and a CPM of 12.29 RON, meaning it obtained the best ratio between the number of clicks (site visit) and the number of impressions. Also, due to the relevance/captivity of the

targeted audience, it registered the lowest cost per 1,000 impressions, making it the most optimum from the cost perspective.
For a better visualization of all three tests, all results were insert in a single table which is presented below.

Table 4. Comparing results and hierarchy of concepts

Dimension / Image (concept)	Test I – part 1 (Employee interview)	Test I – part 2 (Employee interview)	Test II (Facebook Ads)
	7.56	4.71	CTR – 0.58% CPM - 12.29 lei
	6.20	4.37	CTR – 0.47% CPM - 12.59 lei
	6.19	3.71	CTR – 0.53% CPM - 12.49 lei

Source: Author's analysis

The table above shows that the concept of *The satisfied entrepreneur* rated best on all the three steps of the testing process.

5. Conclusions and recommendations

The theoretical framework suggests that advertising creativity is measurable and that more creative advertising can yield better business results. Therefore, we measured the effectiveness of advertising based on creativity at the outset of our research. In the initial test, we analyzed creativity as a single dimension. To validate these initial results, in the second test, we subdivided creativity into five dimensions and examined it as a whole comprising various components.
Based on the two tests we conducted, we can conclude that, in business-to-business communication, the most appealing creative concepts are those that avoid excessive extravagance. Here, extravagance refers to an excess of creativity. Remarkably, the image perceived as less attractive emerged as the most creative among the employees of the company. This same concept yielded the best results in the Facebook Ads platform test.
Additionally, we observed that the assessment of the concept of creativity varies depending on respondents' perceptions. In the first part of the initial test, participants evaluated creativity as separate dimensions, assigning high values. Conversely, in the second part of the initial test, where creativity was assessed based on its constituent dimensions, the scores were considerably lower than those in the first part. This pattern was consistent across all three concepts.
In conclusion, companies can test their advertising concepts using their employees as respondents. Our tests indicated that the same advertising performed best in both the test with employees and the test with potential customers (custom audience on Facebook).
However, this study has two important limitations. The first limitation is that the questionnaires were conducted online; even though all dimensions of creativity were clearly explained, some respondents may not have fully understood them. The second limitation is

that the budget allocated for the promotion of Facebook ads was small. A larger budget would have facilitated the generation of more reliable statistics.

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Image sources:
Concept 1 – ID 110143440, Dreamstime.com
Concept 2 – Fusu G., design made by author
Concept 3 – Gravante A, Alamy Stock Photo

Bio-note

Grigore Fusu, an aspirant pursuing a doctoral degree at Alexandru Ioan Cuza University, ardently engages in scholarly endeavors characterized by an interdisciplinary orientation that converges his expertise in marketing with the realm of arts. His current academic pursuit revolves around the examination of „Art photography consumption motivations - influencing factors and consequences at the macroeconomic and social levels". Grigore is dedicated to research, actively conducting numerous practical investigations designed for businesses of all sizes, showcasing his commitment for research.

MOOD SWINGS AND THE FIRM SIZE PREMIUM

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Abstract: *Evidence accumulated in the literature indicates that the size effect is related to corporate and macroeconomic variables and is paid to compensate for bearing risk. We show that the size premium is also driven by daily variations in investors' moods. We focus on two conditions often cited as possible mechanisms that drive variations in mood: Monday and seasonal affective disorder. The findings are consistent with the evidence that mood deteriorates on Mondays and in the fall and are consistent with the claim that the size effect manifests during economic expansion but weakens in the contraction phase of the economic cycle.*

Keywords: Mood, Size effect, Size premium.

JEL classification: G10, G12, G14.

1. Introduction:

Evidence accumulated worldwide indicates that risk adjusted stock returns are a decreasing function of firm size (Banz, 1981; Cho, 2019). Extensive empirical studies on the size effect use monthly data and relate the size premium to macroeconomic and corporate variables. The classic paradigm suggests that a size premium is paid as compensation for bearing the risk of financial distress (e.g., Hur et al., 2014), idiosyncratic risks (Fu, 2009), liquidity and transaction costs (e.g., Krueger and Johnson, 1991) and changes in the macroeconomic conditions (e.g., Jagannathan and Wang, 1996). However, little is known about the role of investors' mood in justifying or explaining this premium at the daily level. This omission is largely due to the fact that corporate financial data and macroeconomic information are generally released monthly and quarterly.
Several studies about calendar anomalies have shown mixed results. In addition, difficulties in comparing findings from these studies exist, since these studies have used different methodologies, and various data frequencies, data sets and data periods. Furthermore, the differences in the choice of markets, financial assets and stock market countries used in the studies have also affected the comparisons between the findings from the studies.
Despite having published studies that address calendar anomalies, the question remains concerning how markets evolve over time. Some researchers have noted that stock markets evolve over time, from an inefficient state to an efficient state, and that calendar anomalies tend to be unstable over time. Other studies have suggested that stock markets are more efficient, eliminating the Monday and seasonal affective disorder effect. Moreover, in the current age of the information superhighway, information is readily available to a greater number of market players, within a shorter time and at a lower cost than ever before. As a result, there are greater difficulties than ever before to uncover inefficiencies in the financial

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markets. Other scholars have opposed the efficient markets hypothesis on the grounds that it doesn't account for transaction costs, information asymmetries, and irrationality of investor behavior, such as the herd instinct, mass panic, and mass psychosis. Furthermore, financial asset price data can be expected to maintain long memory (persistence), and display clustered volatility, and fat-tailed distributions.
In this study, we investigate the contribution of variations in mood to the daily size premium using US data for 1926 to August 2019. We use two variables often cited in psychology literature as possible mechanisms through which changes in mood could occur. The first is the Monday effect, and the second is the duration of daylight. We posit that a better mood prompts people to increase their risk taking (e.g., Loewenstein et al., 2001; Grable and Roszkowski, 2008). Therefore, when people feel upbeat, they prefer risky assets in the form of small stocks, yielding a positive size premium. We base this suggestion on studies from behavioral finance documenting that non-institutional investors are those who are more likely to be affected by sentiment (e.g., Berkman et al., 2012; Chang et al., 2015). In parallel, other studies report that individual investors are more likely than institutional investors to hold small stocks (e.g., Lemmon and Portniaguina, 2006; Che, 2018). Given these observations, fluctuations in mood may partially explain the daily size premium.
This study relates to the efficient markets hypothesis as postulated by Fama (1965) and Fama (1970), which accounts for markets fully reflecting all available information, and suggests that anomalies in the calendar, such as the effect of the day of the week, the effect of the beginning of the month, the effect of the beginning of the year and the effect of holidays, may not exist. Furthermore, the efficient markets hypothesis implies that investors do not need to attain a position for predicting and get ahead of the market in order to attain excess profits.
Based on previous studies published in the literature, the hypotheses posited for this study are:
H_1: Monday is a strong driver of changes in investors' mood.
H_2: The amount of daylight is a strong driver of changes in investors' mood.
H_3: The stocks return on Mondays are negative.
H_4: The stocks return during Fall are negative.
H_5: The stocks return during Summer are positive.
We subjected our findings to a battery of robustness checks and utilized tools unaffected by outliers to make unbiased inferences. They indicate that returns on small stocks outperform those of large companies on Fridays when investors' mood is high. However, the premium is lower or negative on Mondays when optimism deteriorates. In addition, during the fall, when daylight hours start to decrease, the size premium drops.
Supportive evidence that mood varies across weekdays comes from examining the Twitter Happiness Index. Figure 1 shows that the index values are lower on Mondays, but higher on Fridays and Saturdays.

Figure 1. Twitter Happiness Index (in average level terms) across weekdays.
Source: Author's analysis/processing based on own data

Data are available starting from September 2008 (The Hedonometer, 2023). We rejected the hypothesis that the average on Monday equals that on Friday.
Finally, using the business cycle turning points identified by the National Bureau of Economic Research (NBER), we find that the size effect disappears during recession, but strongly presents during expansion phases of the business cycle. This finding may be due to the relatively high financial leverage and lower productivity during downturns (e.g., Kim and Burnie, 2002). Overall, our findings contradict studies claiming that the size premium has disappeared over time (e.g., Hirshleifer, 2001), and those maintaining that the Monday effect is not as significant in recent data (Zilca, 2017).

2. Scientific Background

Most people hate Mondays. Sleep studies have noted that people mention the pain associated with waking up on a Monday or feeling fatigued despite a full night's sleep (Yang and Spielman, 2001; Taylor, Wright and Lack, 2008). Monday was cited most frequently as the worst morning (e.g., Areni and Burger, 2008). Furthermore, studies document that suicides peak on Mondays (e.g., Stack 1995). Using Twitter posts, Golder and Macy (2011) noted that people tend to be more positive on weekends and early in the morning, and less so on Mondays. Similar results are also documented in other studies in psychology (e.g., Stone, Schneider and Harter, 2012). Transportation studies report that Mondays are seen as the worst traffic days (e.g., Yang, Lu and Liu, 2018). In parallel, the social science literature indicates that the stress that may result from arriving late to work also affects financial decision-making (e.g., Porcelli and Delgado, 2009; Starcke and Brand, 2012).
The seasonal affective disorder (SAD) effect is linked to depression driven by changes in the seasons that start in the fall and continue into the winter months (Cohen et al., 1992; Rosenthal, 1998). Published literature about psychology has established that SAD is associated with daylight in the sense of the length of the day (e.g., Young et al., 1997). Kamstra et al. (2003) and Kamstra et al. (2014) report that even after controlling for standard stock return regularities, there is greater demand for risky stocks in the spring and less demand in the fall.
Theoretically, there are two opposing approaches capable of explaining how mood can alter one's willingness to increase risk. The first is the Affect Infusion Model (AIM, e.g., Forgas 1995), while the second is the Mood Maintenance Hypothesis (MMH, e.g., Isen and Labroo 2003). According to the AIM, an improvement in mood predicts an increase in risk tolerance, whereas a negative mood is expected to lower it.
MMH, on the other hand, suggests that good mood increases agent's unwillingness to increase risk, whereas a bad mood encourages increasing risk. Our results support the AIM approach according to which better mood prompts people to increase their risk taking.

3. Data

The data come from Kenneth French's library (French, 2023). Our sample ranges from July 1926 through August 2019. We follow the literature (e.g., Zakamulin, 2013) and capture the size premium using the average return on the three small-cap portfolios minus the average return on the three large-cap portfolios, sometimes known as the Small Minus Big (SMB) portfolio developed in Fama and French (1993). We obtained the hours of daylight from the Time and Date website (Timeanddate, 2023). Table 1. reports the descriptive statistics of the key variables.

Table 1. Descriptive Statistics
Sample A: Full Sample

	Mean	Med	Max	Min	Stdev.	Skewness	Kurtosis	JB(×100)	#Obs
PRM	0.005	0.020	8.210	-11.620	0.583	-0.763	25.711	**530**	24,559
DAYLIGHT	12.261	12.283	15.231	9.250	1.999	-0.033	1.566	**21**	24,559
H	11.739	11.717	14.750	8.769	1.999	0.033	1.566	**21**	24,559
SAD	0.415	0.000	2.733	-1.636	0.828	1.744	4.480	**14.6**	24,559
FALL	0.208	0.000	2.733	-1.175	0.621	2.961	10.442	**92.55**	24,559
TWTR	6.016	6.020	6.240	5.770	0.042	0.203	4.249	**1.99**	2,763

Source: Author's analysis

The table reports the descriptive statistics of the key variables in this study. The Twitter data starts on September 9, 2008. Data on the rest of the variables are available since July 1, 1926. JB is the Jarque-Bera statistic. PRM is the size premium; "H" is the number of hours between sunrise and sunset, and TWTR is the level of the Twitter Happiness Index.

4. Method

In line with Kamstra et al. (2003), we track the daily variations in the size premium using the following model.

$$PRM_t = C_0 + C_{SAD}SAD_t + C_{FALL}FALL_t + +C_{MON}MON_t + C_{TAX}TAX_t + \sum_{j=1}^{p} d_j\, PRM_{t-j} + u_{i,t}, \quad (1)$$

where PRM_t is the daily size premium captured by Fama and French's (1993) SMB risk factor on day t; C_0 is an intercept; and SAD_t is defined as follows:

$$SAD_t = \begin{cases} H_t - 12 & \text{for trading days in the fall and winter} \\ 0 & otherwise \end{cases}, \quad (2)$$

where H_t is the number of hours between sunrise and sunset, and $(H_t - 12)$ represents the length of the night relative to the annual average length of the night. $FALL_t$ is a dummy variable that receives the value of "SAD_t" for days of the year in the fall season (September 21 to December 20 in the northern hemisphere), and zero otherwise; MON_t captures Mondays; and TAX_t is a dummy variable for tax-loss selling that takes the value of 1 for the day prior to and the four days following the start of a tax year and 0 otherwise (Starks et al., 2006). Finally, we lagged the size premium variable, $\sum_{j=1}^{p} d_j\, PRM_{i,t-j}$, to control for autocorrelation in the residuals.

In order to assess the association between Mondays and negative size premiums, we test the average returns on Mondays and the average on the rest of the trading days.

$$PRM_t = \alpha_0 + \alpha_1 Monday_t + u_t\,. (3)$$

We use the following model to calculate the average of the size premium on Mondays (by α_1), Fridays (by α_2) and the rest of the trading days (by α_0).

$$PRM_t = \alpha_0 + \alpha_1 Monday_t + \alpha_2 Friday_t + v_t. (4)$$

As previously stated, research in psychology has established the existence of weekly cycles in mood, with Mondays as the worst day of the week and Fridays and Saturdays as the favorites (Jessen et al., 1998). Hence, we hypothesize that $\alpha_1 \neq \alpha_2$.

5. Empirical Findings

The estimation results of Eq. (1) is reported in Table 2.. For robustness, we present the estimation results in four different time periods. The first covers the entire sample period of 1926-2019. We divided the whole sample into three relatively equal sub-periods: (1) 1926-1957; (2) 1958-1989; (3) 1990-2019. By and large, the coefficients' signs are maintained regardless of the sample period considered. Technically speaking, the size premium is positively correlated with SAD, but negatively related to FALL. In addition, Mondays are significantly associated with lower size premiums. Finally, the TAX dummy is generally positive and statistically significant. However, it is not statistically significant in the 1990-2019 sub-sample. These findings accord with Kamstra et al. (2003).

Table 2. Regression Results

Sample Period	C_0	SAD	FALL	MON	TAX	PRM(-1)	Adj-R^2	F-Stat
1926-2019	0.003	0.027a	-0.032a	-0.049a	0.255a	-0.051a	0.008	39.83a
1926-1957	0.029a	0.015	-0.03b	-0.108a	0.309a	0.07a	0.011	20.895a
1958-1989	0.007	0.034a	-0.042a	-0.065a	0.246a	0.063	0.018	30.694a
1990-2019	0.012	0.026a	-0.024b	-0.101a	0.018	0.037c	0.007	11.017a

Source: Author’s analysis
Notes: “a,” "b" and "c" indicate statistical significance at the 1%, 5% and 10% levels, respectively.

The table reports the estimation results for Eq. (1). The sample ranges from June 1926 to August 2018. For the sake of robustness, we separate this sample into three equal sub-samples. The first is 1926-1957; the second is 1958-1989 and the last subsample covers 1990-2019. SAD is defined in Eq. (2), and it is the length of the night relative to the annual average length of the night for trading days in the fall and winter; $FALL_t$ is an interactive dummy variable that receives the value of "SAD" for days of the year in the fall season, and zero otherwise; “MON” is a dichotomous variable that captures Mondays; and TAX is a dummy variable for tax-loss selling that takes the value of 1 for the day prior to and the four days following the start of a tax year and 0 otherwise. Eqs. (1) and (2) are as follows.

$$PRM_t = C_0 + C_{SAD}SAD_t + C_{FALL}FALL_t + +C_{MON}MON_t + C_{TAX}TAX_t + \sum_{j=1}^{p} d_j\, PRM_{t-j} + u_{i,t},$$

where:

$$SAD_t = \begin{Bmatrix} H_t - 12 & \text{for trading days in the fall and winter} \\ 0 & otherwise \end{Bmatrix}.$$

The distribution of the size premium on Monday and the rest of the weekdays is reported in Table 3. The findings in Panel A, considering the entire sample period (1926-2019) with 24,539 observations, indicate that Mondays are associated with negative size premiums. The negative size premium appears in all of the sub-sample periods, yet with strong statistical significance for 1958-1989 and 1990-2019.

We also test whether the results are driven by outliers. We use the sign test to assess the null hypothesis, which postulates that the results are not different from a coin toss – 50:50. For this purpose, we simply count the number of Monday and Fridays associated with positive and negative size premiums to determine whether the ratios obtained are statistically different from 50%.

Panels B and C of the table report, respectively, the ratio of the Mondays associated with negative size premiums and the ratio of the Fridays associated with positive size premiums. The findings indicate that between 1926-2019, 52% of Mondays were associated with negative size premiums. This ratio increased to 54.3% during 1990-2019. These ratios are statistically different from 50%, as evident from the sign test results. On the other hand, Fridays during 1926-2019 concluded with positive size premiums in 55.3% of the sampled Fridays. Among the 4,680 Fridays examined, there were 2,588 Fridays in which the premium increased, 2,029 where it declined and 63 in which it was unchanged. During 1958-1989 the ratio of Fridays associated with positive size premiums leaped to 61%. Again, based on the sign test, we reject the null hypothesis, meaning that the ratios obtained are not equal to 50%.

Table 3a. Size Premium on Mondays. Panel A: Estimation Results of Eq. (3)

	Variable	**Coefficient**	**St. Error**	**T-Stat.**	**Prob.**	**#Obs**
1926-2019	Intercept	0.015	0.004	3.555	0.000	24,539
	Monday	-0.055	0.010	-5.675	0.000	
1926-1957	Intercept	0.004	0.008	0.559	0.576	9,036
	Monday	-0.008	0.019	-0.395	0.693	
1958-1989	Intercept	0.019	0.005	3.703	0.002	8,047
	Monday	-0.061	0.012	-5.043	0.000	
1990-2019	Intercept	0.022	0.007	2.936	0.003	7,457
	Monday	-0.100	0.017	-5.874	0.000	

Source: Author’s analysis
Notes: The table reports the estimation results of Eq. (3): $PRM_t = \alpha_0 + \alpha_1 Monday_t + u_t$.

Table 3b. Size Premium on Mondays. Panel B: Ratio of Negative Size Premium on Mondays –Sign Test Results

	“+” Mondays	**“–” Mondays**	**Unchanged Mondays**	**“–” Mondays (%)**
1926-2019	2,112	2,343	53	52.0%***
1926-1957	757	756	27	49.1%
1958-1989	724	821	12	52.7%**
1990-2019	631	766	14	54.3%***

Source: Author’s analysis
Notes: For 1926-2019, there were 4,508 Mondays. Out of the 4,508 Mondays, there were 2,112 positive Mondays and 2,343 negative Mondays. The ratio of the negative Mondays is 52%. This ratio peaks to 54.3% during 1990-2019. The null hypothesis is that the ratio is equal to 50% - a coin toss. The right-hand column presents the ratios of the negative Mondays. *** and ** indicate the rejection of this hypothesis at the statistical significance levels of 1% and 5%, respectively.

Table 3c. Size Premium on Mondays. Panel C: Ratio of Positive Size Premium on Fridays –Sign Test Results

	"+" Fridays	"–" Fridays	Unchanged Friday	"–" Fridays (%)
1926-2019	2588	2029	63	55.3%***
1926-1957	813	735	31	51.5%
1958-1989	979	607	19	61.0%***
1990-2019	796	687	13	53.2%***

Source: Author's analysis
Notes: The right-hand column presents the ratios of the positive Fridays. *** indicates rejection of the null hypothesis (50%-50%) at the statistical significance level of 1%.

In Table 4, we report the estimation results for Eq. (4), which captures the average of the size premium on Monday, Friday and the rest of the weekdays. Our findings accord with the hypothesis about investors' mood. Previous research has established that Monday and the amount of daylight are strong drivers of changes in investors' mood. We find that these changes have a demonstrable effect on the *daily* size premium, in other words, we validated hypothesis H_1 and hypothesis H_2. The size premium is negative on Mondays but positive on Fridays. This finding holds true for the entire sample and all of the sub-sample periods. The results are remarkable in terms of statistical significance and coefficients, particularly for the periods following 1958.
Overall, investors seem optimistic on Fridays and pessimistic on Mondays. The literature has established that optimistic people underreact to negative information and overreact to positive information (e.g., Sharot, et al., 2011; Gama and Vieira, 2013).

Table 4. Friday, Monday and the Rest of the Weekdays

	Variable	Coefficient	St. Error	T-Stat.	Prob.	N
1926-2019	Intercept	0.006	0.005	1.310	0.190	24,536
	Monday	-0.046	0.010	-4.666	0.000	
	Friday	0.036	0.010	3.733	0.000	
1926-1957	Intercept	0.006	0.009	0.672	0.501	9,036
	Monday	-0.009	0.020	-0.466	0.641	
	Friday	-0.008	0.020	-0.383	0.702	
1958-1989	Intercept	0.001	0.006	0.097	0.922	8,047
	Monday	-0.042	0.012	-3.367	0.001	
	Friday	0.077	0.012	6.280	0.000	
1990-2019	Intercept	0.012	0.009	1.430	0.153	7,475
	Monday	-0.091	0.018	-5.158	0.000	
	Friday	0.039	0.017	2.253	0.024	

Source: Author's analysis
Notes: The table reports the estimation results of Eq. (3): $PRM_t = \alpha_0 + \alpha_1 Monday_t + \alpha_2 Friday_t + u_t$.

5.1. Robustness checks

To assess the robustness of our results, we capture the size premium using the difference between the lowest (Decile1) and the highest decile (Decile10) portfolios – i.e., D_1-D_{10} (e.g., Hur, et al., 2014), and use both equal-weighted and value-weighted decile returns. The results appear in Tables 5 and 6, and strongly support our hypothesis.

Table 5a. D_1-D_{10} on Mondays. Panel A: Value-weighted D_1-D_{10}

	"+" Monday	**"–" Monday**	**Unchanged Mondays**	**"–" Monday (%)**
1926-2019	2060	2448	27	54.3%***
1926-1957	696	844	7	54.8%***
1958-1989	730	827	13	53.1%**
1990-2019	634	777	7	55.1%***

Source: Author's analysis

Table 5b. D_1-D_{10} on Mondays. Panel B: Equal-weighted D_1-D_{10}

	"+" Monday	**"–" Monday**	**Unchanged Mondays**	**"–" Monday (%)**
1926-2019	2173	2335	34	52.2%**
1926-1957	743	797	12	52.1 %
1958-1989	762	795	16	51.6%
1990-2019	668	743	6	52.9%**

Source: Author's analysis

Notes: The size premium is defined here as the difference between the lowest (Decile1) and the highest decile (Decile10) portfolios – i.e., D_1-D_{10} (e.g., Hur, et al., 2014). This proxy also supports the tendency for higher premiums on Fridays and lower premiums on Mondays. "+" Fridays and "–" Fridays indicate the number of positive and negative Fridays detected within the sample period, respectively. "+" Fridays (%) is the percentage of positive Fridays in the specific sample period.

Table 6a. D_1-D_{10} on Fridays. Panel A: Value-weighted D_1-D_{10}

	"+" Friday	**"–" Friday**	**Unchanged Fridays**	**"+" Friday (%)**
1926-2019	2671	2009	21	56.8%***
1926-1957	788	791	10	49.6%
1958-1989	1007	598	6	62.5%***
1990-2019	876	620	5	58.4%***

Source: Author's analysis

Table 6b. D_1-D_{10} on Fridays. Panel B: Equal-weighted D_1-D_{10}

	"+" Friday	**"–" Friday**	**Unchanged Fridays**	**"+" Friday (%)**
1926-2019	2894	1786	28	61.5%***
1926-1957	911	668	10	57.3%***
1958-1989	1037	568	13	64.1%***
1990-2019	946	550	5	63.0%***

Source: Author's analysis

Notes: The size premium is defined here as the difference between the lowest (Decile1) and the highest decile (Decile10) portfolios – i.e., D_1-D_{10} (e.g., Hur et al., 2014). This proxy also supports the tendency for higher premiums on Fridays and lower premiums on Mondays. "+" Fridays and "–" Fridays indicate the number of positive and negative Fridays detected within the sample period, respectively. "+" Fridays (%) is the percentage of positive Fridays in the specific sample period.

Finally, we test whether the picture is maintained during recession and economic expansion periods - identified by the NBER. Our sample includes 199 months associated with recession. The results in Panel A of Table 7 indicate that the size premium fails to detect any abnormal premiums on both Mondays and Fridays during recession periods. However, the results for the expansion phase of the economy, reported in Table 8, show that the effect is more significant on Friday and Monday. Overall, our findings are consistent with the empirical evidence that firm size effect intensifies during economic expansion phase of the economic cycle but fades during recession (Kim and Burnie, 2002). Since the findings are consistent with the evidence that mood deteriorates on Mondays and in the Fall and are consistent with the claim that the size effect manifests during economic expansion but weakens during the contraction phase of the economic cycle, we invalidated hypothesis H_3 and hypothesis H_4 and hypothesis H_5.

Table 7a. Size Premium during Recession Periods. Panel A: Fama-French SMB

	Mondays				**Fridays**			
	"+" Monday	"–" Monday	Un-Changed Monday	"–" Monday (%)	"+" Friday	"–" Friday	Un-Changed Friday	"+" Friday (%)
1926-2019	407	389	11	48.2%	416	397	14	50.3%
1926-1957	222	185	7	44.7%*	208	205	10	49.2%
1958-1989	125	129	3	50.2%	139	122	1	53.1%
1990-2019	60	75	1	55.1%	69	70	3	48.6%

Source: Author's analysis

Table 7b. Size Premium during Recession Periods. Panel B: Value-weighted D_1-D_{10}

	Mondays				**Fridays**			
	"+" Monday	"–" Monday	Un-Changed Monday	"–" Monday (%)	"+" Friday	"–" Friday	Un-Changed Friday	"+" Friday (%)
1926-2019	373	428	6	53.0%**	426	398	3	51.5%
1926-1957	184	228	2	55.1%**	195	226	2	46.1%*
1958-1989	127	126	4	49.0%	151	110	1	57.6%***
1990-2019	62	74	0	54.4%	80	62	0	56.3%*

Source: Author's analysis

Table 7c. Size Premium during Recession Periods. Panel C: Equal-weighted D_1-D_{10}

	Mondays				**Fridays**			
	"+" Monday	"–" Monday	Un-Changed Monday	"–" Monday (%)	"+" Friday	"–" Friday	Un-Changed Friday	"+" Friday (%)
1926-2019	401	401	5	49.7%	469	355	3	56.7%***
1926-1957	200	212	2	51.2%	233	189	1	55.1%**
1958-1989	132	122	3	47.5%	149	111	2	56.9%**
1990-2019	69	67	0	49.3%	87	55	0	61.3%***

Source: Author's analysis data

Notes: For the sample period (1926-2019), there were 807 Mondays and 827 Fridays during recession periods as defined by the National Bureau of Economic Research (NBER).

According to Panel A, the probability of obtaining negative size premium on Monday equals 50%, and the same applies for Fridays. When considering other definitions of the size premium i.e., D_1-D_{10} (e.g., Hur et al., 2014), we find that small firms still outperform big ones on Friday as illustrated in Panels B and C. “+” and “–” denote positive and negative, respectively.

Table 8a. Size Premium during Economic Expansion. Panel A: Fama-French SMB

	Mondays				**Fridays**			
	“+” Monday	“–” Monday	Un-Changed Monday	“–” Monday (%)	“+” Friday	“–” Friday	Un-Changed Friday	“+” Friday (%)
1926-2019	2112	2343	53	52.0%***	2588	2029	63	55.3%***
1926-1957	757	756	27	49.1%	813	735	31	51.5%
1958-1989	724	821	12	52.7%**	979	607	19	61.0%***
1990-2019	631	766	14	54.3%***	796	687	13	53.2%***

Source: Author’s analysis

Table 8b. Size Premium during Economic Expansion. Panel B: Value-weighted D_1-D_{10}

	Mondays				**Fridays**			
	“+” Monday	“–” Monday	Un-Changed Monday	“–” Monday (%)	“+” Friday	“–” Friday	Un-Changed Friday	“+” Friday (%)
1926-2019	1687	1993	21	53.9%***	2245	1590	18	58.3%***
1926-1957	512	609	5	54.1%***	593	555	8	51.3%
1958-1989	603	688	9	52.9%**	856	482	5	63.7%***
1990-2019	572	696	7	54.6%***	796	553	5	58.8%***

Source: Author’s analysis

Table 8c. Size Premium during Economic Expansion. Panel C: Equal-weighted D_1-D_{10}

	Mondays				**Fridays**			
	“+” Monday	“–” Monday	Un-Changed Monday	“–” Monday (%)	“+” Friday	“–” Friday	Un-Changed Friday	“+” Friday (%)
1926-2019	2173	2335	34	47.8%**	2425	1403	25	62.9%***
1926-1957	743	797	12	47.9%	678	469	9	58.7%***
1958-1989	762	795	16	48.4%	888	444	11	66.1%***
1990-2019	668	743	6	47.1%**	859	490	5	63.4%***

Source: Author’s analysis
Notes: Data on the economic expansion and recession periods come from the NBER. (***), (**) and (*) indicate statistical significance at the levels 1%, 5% and 10%, respectively.

6. Conclusions

Prior works have established that Monday and the amount of daylight are strong drivers of changes in investors’ mood. We find that these changes have a demonstrable effect on the *daily* size premium. Our robustness checks obviate the possibility that outliers are driving the results. Our findings are important and have useful implications for market efficiency, and help to reconcile mixed findings in previous studies, including findings that show there is no appearance of the weekday effect in those years. Furthermore, these findings support the recent literature highlighting the role of investors’ mood in affecting asset pricing. This study used only available US data to investigate the contribution of variations in mood to the daily size premium. Additional research could expand the study using corroborating evidence from markets in other countries. Future research also could be designed to extend our study and focus on other investment tools such as derivatives, options, cryptographic assets and others, so we can learn more about the phenomenon of the day-of-the-week effect.

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