International Journal of Scientific Research in Science, Engineering and Technology
Print ISSN: 2395-1990 | Online ISSN : 2394-4099 (www.ijsrset.com)
doi : https://doi.org/10.32628/IJSRSET218218

The Moderating Effect of Environmental Turbulence on the Relationship Between Customer Relationship Management and Business Performance

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ABSTRACT

This article mainly aims to verify the moderating role environmental turbulence plays on the relationship between customer relationship management and business performance. The research was performed based on the survey performed in Ghana telecommunication sector, and the sample included 579 staff from MTN Ghana, VODAFONE Ghana, ALTEL/TIGO Ghana, ESPRESSO Ghana and GLOBACOM Ghana. The statistical analysis of the obtained results was carried out using multiple linear regression analysis with STATA and AMOS statistical software package. The obtained results clearly show that all constructs of CRM namely information sharing, customer involvement, joint problem solving, long-term partnership and technology-based CRM have a significantly positive impact on business performance. The moderation analysis indicated that technological turbulence positively moderates the relationship that existed between the various constructs of customer relationship management and business performance indicating that technological turbulence significantly strengthens the relationship between these variables. On the contrary, market turbulence significantly weakens the relationship between the various customer relationship management constructs and business performance. These findings contribute immensely to literature and knowledge by indicating which moderating environmental turbulence significantly strengthens and weakens the existing relationship between customer relationship management and business performance within the Ghanaian telecommunication sector.

Article Info
Volume 8 Issue 2
Page Number: 87-105

Publication Issue :
March-April-2021

Article History
Accepted : 15 March 2021

Keywords : Customer Relationship Management (CRM), Business Performance (BP), Technological Turbulence, Market Turbulence.

NOTE:
CRM = Customer Relationship Management

Published : 23 March 2021

BP = Business Performance
ET = Environmental Turbulence
TT = Technological Turbulence
MT = Market Turbulence
IS = Information Sharing
CI =Customer Involvement
JBS = Joint Problem Solving
LTP = Long Term Partnership
TBCRM = Technology Based Customer Relationship Management

I. INTRODUCTION

The previous decade has been set apart due to a significant change that has transformed the whole telecommunication industry across the globe. The aggressive rivalry, deregulation and dynamic technological and market powers have molded the manner the telecommunication industry manages their businesses. This sway of change has brought about significant deviations in regards to collaborating with the customers not only in the developed economies but also in the developing countries such as Ghana. To battle these changes and to develop and sustain the business the companies must embrace customer-oriented strategies that will be aimed at maintaining customers. This draws expanded accentuation on successful CRM practice due to more intensified competition in the market. Through effective CRM, telecom service providers differentiate themselves which can lead to the creation of a sustainable competitive power (Siddiqi et al 2018 chang et al, 2014).

Contingency theory characterized by resource-based theory calls businesses' attention to respond to environmental turbulence (Pratono et al., 2014). In prominent economies, emerging businesses are connected with the capability to deal with the changing environment. A high understanding of environmental uncertainty plays a magnificent role in business control (Xheneti & Bartlett, 2012). There is a strong relationship among environment, organizational structure and performance (Williams et al., 2016). A dynamic organization working in an uncertain and turbulent environment is the one with flexibility, greater adaptive capacity and CRM-oriented. To survive the increasing environmental uncertainties and complexities, businesses need to increase their complexities according to the external environment (Abbas et al., 2017; Schneider et al., 2017). The telecommunication industry around the world is experiencing a complex and rapidly changing environment in technology, market and customer demands. This challenging market environment and rapidly changing technology place major pressure on businesses to manage their resources through effective strategic management to gain competitive powers. Maintaining good customer relations and adhering to the environment are essential tools for business success (Abbas et al., (2017).

A multiplicity of studies have been done globally especially in developed areas such as Europe, America, Asia and the Western world on the impact of CRM on business performance (Valmohammadi, 2017; Seyed and Masoud, 2015). However, the impact of CRM on

BP in the developing context like Ghana and other parts of Africa is still unclear. Also, most of the published studies conducted in Ghana and other parts of Africa on CRM and BP in the service industry focused on banks and other sectors and little work has been done in the telecommunication sector. Again, the literature on CRM BP lacks a clear insight into the concept of moderating effects of environmental turbulence.

Based on these reasons this research seeks to examine 1. the effect of CRM on BP. 2. to what extent does environmental turbulence moderates the existing relationship between CRM and BP.

The remaining of the study is treated as follows: section two (2) looks at the relevant literature of the research, section three (3) deals with methodology. This includes variables, data and econometric modeling. Section four (4) discusses the results. It presents results based on research objectives. Finally, section five (5) discussions the findings and conclusions, recommendations, contributions and limitations of the studies.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Customer relationship management (CRM)

Customer relationship management (CRM) is considered as one of the paramount business approaches that enable businesses to understand the changing preferences of customers. It involves a result-oriented dialogue between a business and its customers. This is done to improve the customer acquisitions, customer retention, profitability and positive relationship between businesses and their customers (Hassan, 2018). CRM is seen as the most paramount technique to reap a competitive advantage (Al-Azzam, 2016). Businesses use CRM strategy to increase income and revenues by specializing in customer retention and loyalty (Mohammed et al., 2014). CRM emerged as the second great vital management tool for organizational success during the year 2006 to 2010. Also, since the world recovers from the latest economic downturn because of accelerated competition, CRM has become relevant in today's management (Darrel, 2010). Literature has considered 5 practices of CRM that have been adopted in many kinds of research. They include Information Sharing (IS), Customer Involvement (CI), Joint Problem Solving (JBS), Long Term Partnership (LTP) and Technology-Based CRM (TBCRM) (Valmohammadi, 2017; Lin et al., (2010).

Business performance (BP)

One of the major issues that border most managers and/or business owners is how their business performs in the marketplace (Tseng et al., 2013). Therefore, BP has been regarded by managers and business owners as a paramount management strategy (Gupta & Wales, 2017). According to Agwu, (2018) BP is the overall wellbeing of the business according to their results measured against assets committed to achieving the set goals. BP is the achievement of a business strategic goals and objectives (Almatroshi et al., 2016). It is the multidimensional nature of business performance by measuring marketing and financial performance through sales growth, the profit margin on sales return on investment, market share, return on assets and overall profitability (Battor & Battor, 2010). It is the output-input ratio in the entire business of an enterprise, the degree of target achievement, and the satisfaction of participants in the business process. It is how well an organization achieves its market-oriented and financial goals (Henseler et al., 2015).

Customer relationship management (CRM) and business performance (BP)

CRM is the knowledge and skills of a business to establish, maintain and improve the beneficial relationships with customers. Businesses that used

their resources to establish a strong CRM system gain excellent performance (Nasution & Rafiki, 2018). It plays an important role to enhance business performance CRM is considered as one of the vital organization's resources that contribute to better business performance (Akroush et al., 2011). Ernst, Hoyer, Krafft, and Krieger (2011) developed a conceptual framework in which multiple facets of CRM are linked to a new product and BP. They find evidence that CRM can strengthen new product performance which in return enhances BP. There have been a lot of studies in the various organizations to determine the connection between CRM and BP. For instance, in the banking sector by Akroush et al, (2011), in the hotel by Mohammed et al (2014), in the insurance companies by Nwankwo & Ajemunigbohun (2013), in the telecommunication sector by (Toyese, 2014). All the following research results showed a positive relationship between CRM and BP (Nasution & Rafiki, 2018; Mozaheb, et al., 2015; Coltman, T et al., 2011). Based on the above studies, we therefore, hypothesize that:

H1a: There is a positive relationship between information sharing (IS) and business performance (BP).

H1b: There is a positive relationship between customer involvement (CI) and business performance (BP).

H1c: There is a positive relationship between joint problem solving (JBS) and business performance (BP).

H1d: There is a positive relationship between long term partnership (LTP) and business performance (BP).

H1e: There is a positive relationship between technology based CRM (TBCRM) and business performance (BP).

Moderating role of environmental turbulence (ET)

Current studies asserted that for businesses to be successful and attain competitive advantage must consider its external environmental forces and respond to such an environment (Galbraith, 2002). However, the recent environment is identified as changing and unpredicted which affects business activities. Environmental Turbulence (ET) is the rate of unpredictability and highly varied events which occur in the environment in which a particular business operates. It is an environment with a high degree of inter-period change that causes dynamism and uncertainty (Turulja & Bajgoric, 2019; Mukhtar et al., 2017). ET is considered to come with the moderating effect that changes the direction of a relationship between CRM and BP. The moderating effect of ET says that the relationship between CRM and BP depends on the external environment. Greater BP can be achieved by matching CRM to market and technological changes and turbulences considering the competitors' activities. Based on the research objective, technological turbulence (TT) and market turbulence (MT) are considered expedient for this research (Faridah & Yuserrie, 2017). Many researchers have shown that environmental turbulence provides a moderating effect on the relationship between CRM and BP (Turulja & Bajgoric, 2019; Abbas & Ul Hassan (2018), Faridah and Yuserrie, (2017), Abbas & Ul Hassan (2017). Base on the above literature we therefore hypothesize that:

H2a: technological turbulence (TT) positively moderates the relationship between customer relationship management (CRM) and business performance (BP).

H2b: market turbulence (MT) negatively moderates the relationship between customer relationship management (CRM) and business performance (BP).

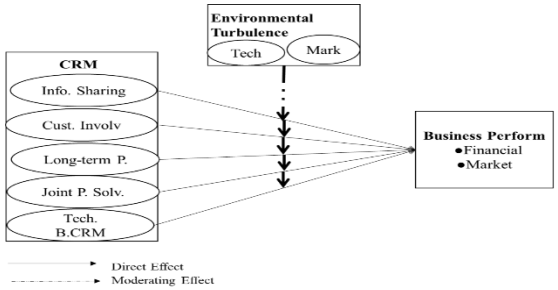

Figure 1: Conceptual framework of the study

III. RESEARCH METHODOLOGY

Participants

The participants for this study are the various departmental heads, branch managers and permanent staff of Ghana telecommunication sector in the Greater Accra, Ashanti and Western Region of Ghana. They include MTN Ghana, VODAFONE Ghana, ARTILETIGO Ghana, GLOBACOM Ghana and ESPRESO Ghana. Considering the complexity of the sample, we used a multidimensional sampling method involving proportionate and simple random sampling methods to select representative participants from the various telecommunication companies from the selected Regions. A total of 736 respondents were approached and 683 participated but 579 valid questionnaires representing 78.7% were used for analysis. Out of the 579 participants surveyed for the study, 32.64% were from MTN, 27.24% VODAFONE, 21.24% were from ARTILTIGO, 11.92% from ESPRESSO and 6.39% from GLO. Males represented 56.16% while females represented 43.84%. Furthermore, 16.67% aged 30 years or below, 36.32%, 31.89% and 15.12% were between 31-40years, 41-50years and 51-60 years respectively. Additionally, 28.46% had secondary and diploma education while 39.94% and 31.60% had a degree and postgraduate education respectively.

Measures

The study used three sets of questionnaires: (1) customer relationship management measuring instrument adapted from Valmohammadi, (2017) and Lin et al., (2010) which is a 24 item scale, 5 each measuring information sharing, customer involvement and technology-based CRM, 3 joint problems solving, 6 long term partnership; (2) business performance scale adapted from Valmohammadi, (2015), Battor & Battor, (2010) which is a 6 item scale which combines both financial and market performance; (3) environmental turbulence scale also adapted from Hamad, (2016) which is a 10 item scale, 5 each measuring technological turbulence and market turbulence. These scales were adapted for the following reasons. Firstly, in the literature, the instruments are widely accepted and used as valid and reliable for measuring the variables under study (Lin et al., (2010). Lin et al., (2010) reported a Cronbach's values of the five customer relationship management dimensions were 0.95, 0.97, 0.94, 0.94 and 0.81, respectively (Lin et al., (2010). Valmohammadi, (2015) reported Cronbach's alpha of 0.77 for business performance. Hamad, (2016) reported Cronbach's alpha of 0.83 for environmental turbulence. Secondly, these instruments were influenced by the theoretical underpinnings of the variables used in this study. Thirdly, they address the multidimensional nature of the variables used. Each item on the scales was measured using a seven-point Likert scale ranging from 1 – 7. In line with the literature, the reliability results from the pilot testing of the instruments were consistent with the reliabilities established in the literature. The Cronbach alpha 'α' for the scales were information sharing (α=0.80), customer involvement (α=0.79), joint problem solving (α=0.85), long term partnership (α=0.85), technology-based CRM (α=0.81), business performance (α=0.84), technological turbulence (α=0.86) and market turbulence (α=0.82).

Data Collection

Considering the comprehensive nature of the instruments and the desire to obtain reliable data, this study adopted a descriptive survey research design which usually based on a large representative sample and also portrays an accurate profile of persons, events, or situations (Saunders et. al., 2015). The cross-sectional descriptive survey was found to be most appropriate. The empirical data was gathered at only one point in the whole time from different types of samples of respondents (Malhotra, 2010). Self-administered questionnaires were used to collect data from respondents. Data collection took approximately

three months. Ethical issues were considered especially using the informed consent approach and participants' confidentiality.

Data Analysis

The analysis of the data was done using STATA version 15.0 and Amos version 22.0 statistical tools. The authors followed four key processes in analysing the data. Firstly, the questionnaires were screened and the appropriate ones were entered into the databases. Questionnaires from respondents who had spent less than three years and non-permanent staff were not included in the final dataset because they possess little knowledge about the company and might lead to wrong assessment. Secondly, the consistency and stability of the data were verified by calculating the coefficient of the fractal dimension using STATA software. Thirdly, we established the authenticity and relevance of the construct validity of the scales by conducting confirmatory factor analyses (CFA) using AMOS software. Fourthly, yet importantly, the hypotheses were tested for direct relationships using multiple linear regression models. In the mediation analysis, we used STATA and Structural Equation Modelling (SEM) command to be able to estimate both total and indirect effects in addition to the direct effects.

Validity and Reliability Analysis

Through confirmatory factor analysis (CFA) performed on our variables, we established that all the standardized factor loadings are greater than 0.60 and the t-values are significant for all the items (see Table 1).

Table 1 : CFA Standardized Factor Loadings and T Values

Construct	Items	β	t value	Construct	Items	β	t value
Information Sharing	IS1	0.656	22.230	Technology Based	TB1	0.640	15.970
	IS2	0.737	28.520		TB2	0.736	29.660
	IS3	0.753	30.070		TB3	0.776	34.080
	IS4	0.647	21.650		TB4	0.736	29.750
	IS5	0.637	15.510		TB5	0.654	22.710
Customer Involvement	CI1	0.692	24.560	Business Performance	BP1	0.639	21.970
	CI2	0.675	23.300		BP2	0.735	30.170
	CI3	0.750	29.210		BP3	0.697	26.590
	CI4	0.604	18.740		BP4	0.717	28.410
	CI5	0.634	15.170		BP5	0.694	26.230
Joint Problem Solving	JPS1	0.788	36.700		BP6	0.699	19.270

	JPS2	0.819	39.610	Technological Turbulence	TT1	0.696	30.910
	JPS3	0.810	38.520		TT2	0.635	29.270
Long Term Partnership	LTP1	0.716	29.060		TT3	0.894	36.220
	LTP2	0.728	30.260		TT4	0.685	31.060
	LTP3	0.779	36.610		TT5	0.615	29.110
	LTP4	0.674	25.060	Market Turbulence	MT1	0.652	29.290
	LTP5	0.691	26.370		MT2	0.685	30.370
	LTP6	0.641	16.260		MT3	0.723	31.280
					MT4	0.700	30.440
					MT5	0.733	31.340

IV. RESULTS AND DISCUSSION

Tables 2 and 3 present the results of the descriptive statistics. We performed other descriptive statistics for the variables by using STATA version 15.0 and performed validity and reliabilities for the scales using AMOS version 22.0.

Table 2 : Composite Reliability, Mean and Standard Deviations

Variable	CR	Obs	Mean	Std. Dev.	Min	Max
IS	0.80	579	2.523	0.988	1	6
CI	0.79	579	2.658	0.993	1	6
JPS	0.85	579	2.993	1.565	1	7
LTP	0.85	579	2.610	1.154	1	6
TBCRM	0.81	579	2.427	1.110	1	7
BP	0.84	579	2.655	1.132	1	7
TT	0.86	579	2.434	1.147	1	7
MT	0.79	579	3.547	1.917	1	7

According to Table 2, there were 579 observations used for the analysis. The mean values for the variables ranged between 2.427 (SD=1.110) for technological based CRM to 3.547 (SD=1.917) for market turbulence suggesting that the mean values for the variables are moderate to the high level given that the Likert scales ranged from 1-7 ratings.

Table 3: Average Variance Extracted and Inter-Factor Correlations.

	AVE	IS	CI	JPS	LTP	TBCRM	BP	TT	MT
IS	.552	**.743**							
CI	.568	0.250	**.754**						
JPS	.649	0.177	0.266	**.806**					
LTP	.579	0.181	0.113	0.216	**.761**				
TBCRM	.581	0.252	0.093	-0.014	0.291	**.762**			
BP	.565	0.245	0.176	0.096	0.229	0.301	**.752**		
TT	.571	0.076	0.130	0.090	0.077	0.156	0.161	**.756**	
MT	.621	-0.062	-0.035	-0.071	-0.068	-0.105	-0.155	-0.005	**.788**

The validity analysis disclosed that the average variance extracted (AVE) for the scales ranged from 0.552 – 0.621 indicating that the values are above the recommended threshold (0.50) for acceptable AVE (Gaskin & Lim, (2016). This shows evidence of convergence validity, also we followed Fornell and Larcker's and established that the square root of the AVE values ranged from 0.743 - 0.788. These values were high above the inter-factor correlations among the constructs providing strong evidence of discriminant validity. These were all above the reliability threshold generally recommended for using an instrument (Fornell, & Larcker, 1981). Business performance is the dependent variable.

Direct Relationships

Table 4: the effect of CRM constructs on BP.

Variable	Business performance						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	1.880***	1.537***	1.560***	1.828***	1.689***	1.562***	1.148***
	(0.297)	(0.304)	(0.313)	(0.309)	(0.304)	(0.294)	(0.317)
Gender	0.134*	0.127	0.140*	0.135**	0.141**	0.120**	0.125*
	(0.067)	(0.066)	(0.067)	(0.067)	(0.067)	(0.065)	(0.065)

Age	0.305***	0.285***	0.307***	0.307***	0.294***	0.275***	0.264***
	(0.043)	(0.043)	(0.043)	(0.044)	(0.043)	(0.043)	(0.042)
Educational background	0.168***	0.184***	0.179***	0.168***	0.164***	0.150***	0.169***
	(0.055)	(0.054)	(0.055)	(0.055)	(0.055)	(0.054)	(0.050)
Region	0.002	0.003	0.002	0.004	0.005	0.001	0.001
	(0.052)	(0.051)	(0.051)	(0.052)	(0.051)	(0.050)	(0.050)
Branch	0.034	0.031	0.034	0.035	0.028	0.028	0.035
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Company	0.173***	0.170***	0.171***	0.172***	0.169***	0.171***	0.169***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Position	0.101**	0.093*	0.089	0.101	0.099**	0.089	0.077**
	(0.048)	(0.047)	(0.047)	(0.047)	(0.047)	(0.046)	(0.046)
Experience	0.306***	0.288***	0.287**	0.303**	0.298***	0.299***	0.275***
	(0.049)	(0.048)	(0.049)	(0.049)	(0.049)	(0.047)	(0.047)
IS		0.150***					0.092**
		(0.035)					(0.037)
CI			0.108***				0.076**
			(0.035)				(0.036)
JPS				0.034*			0.037*
				(0.017)			(0.018)
LTP					0.085**		0.83**
					(0.031)		(0.032)
TBCRM						0.185***	0.153***
						(0.031)	(0.033)
F-test	62.17***	57.12***	56.56***	55.25***	56.75***	62.52***	45.29***
R-squared	0.466	0.475	0.443	0.466	0.473	0.497	0.510
Adj R-squar	0.459	0.466	0.435	0.458	0.465	0.489	0.499
Obs	579	579	579	579	579	579	579

***,**,* indicate significant at 10%, 5% and 1% levels of significance respectively, standard errors are in parenthesis ( ).

According to table 4 above, the results show the effects of (CRM) constructs on BP. Using information sharing (IS) as the independent variable and conditioning other BP determinants such as age, educational background, company, position, experience, the results in model 2 show that IS has significantly positive effects on BP. Also, using customer involvement (CI) as the independent variable and conditioning other BP determinants such as gender, age, educational background, company, experience, the results in model 3 indicates that CI has significant positive effects on BP. Again, using joint problem solving (JPS) as the independent variable and conditioning other BP determinants such as gender, age, educational background, company, experience, the results in model 4 reported that JPS has significant positive effects on BP. Furthermore, using long term partnership (LTP) as the independent variable and conditioning other BP determinants such as gender, age, educational background, company, position, experience, the results in model 5 show that LTP has significant positive effects on BP. Moreover, using technology-based CRM (TBCRM) as the independent variable and conditioning other BP determinants such as gender, age, educational background, company, experience, the results in model 6 show that TBCRM has significant positive effects on BP. Generally, according to model 7 of table 4, conditioning other BP determinants, all the CRM constructs have significant and positive effects on BP. These results reaffirm and support hypothesis **1a, 1b, 1c, 1d** and **1e** which state that CRM exhibit positive impact on BP.

4.2 : The moderating effect of ET on the relationship between CRM constructs and BP.

Table 5 : Moderating role of ET on the relationship between IS and BP.

Variable	Business performance		
	Model 1	Model 2	Model 3
Constant	1.537*** (0.304)	1.233*** (0.356)	1.816*** (0.361)
Gender	0.127* (0.063)	0.109 (0.067)	0.132* (0.066)
Age	0.285*** (0.043)	0.289*** (0.043)	0.276*** (0.043)
Educational background	0.184*** (0.054)	0.166*** (0.055)	0.180*** (0.054)
Region	0.003 (0.051)	0.006 (0.051)	0.002 (0.051)
Branch	0.031 (0.020)	0.031 (0.020)	0.029 (0.020)
Company	0.170*** (0.015)	0.169*** (0.015)	0.172*** (0.015)
Position	0.093* (0.047)	0.100* (0.047)	0.093** (0.046)
Experience	0.288*** (0.048)	0.284*** (0.048)	0.284*** (0.048)
IS	0.150*** (0.035)	0.233*** (0.083)	0.116* (0.054)
TT		0.160* (0.080)	
MT			-0.064** (0.027)
IS X TT		0.036** (0.014)	
IS X MT			-0.009** (0.004)
F-test	58.92***	49.15***	49.01***
R-squared	0.482	0.488	0.487
Adj R-squar	0.474	0.478	0.477
Obs	579	579	579

***,**,* indicate significant at 10%, 5% and 1% levels of significance respectively, standard errors are in parenthesis ( ).

Using IS as the independent variable and conditioning other BP determinants such as age, educational background, company, position, experience and IS, the results in models 2 of table 5 show that TT and the interaction of IS and TT are significant with positive coefficients of 0.160 and 0.036 respectively. Similarly, IS as the independent variable and conditioning all other BP determinants such as gender, age, educational background, company, position, experience and IS, the results in models 3 of table 5 show that MT and the interaction of IS and MT are significant but with negative coefficients of 0.064 and 0.009 respectively. According to table 5, TT significantly moderates and strengthens the relationship between IS and BP while MT significantly dampens the relationship between the two.

Table 6 : Moderating role of ET on the relationship between CI and BP

Variable	Business performance		
	Model 1	Model 2	Model 3
Constant	1.560*** (0.313)	1.647*** (0.369)	1.711*** (0.384)
Gender	0.140* (0.067)	0.120 (0.067)	0.145* (0.067)
Age	0.307*** (0.043)	0.308*** (0.043)	0.296*** (0.043)
Educational background	0.179*** (0.055)	0.168*** (0.055)	0.178*** (0.055)
Region	0.002 (0.051)	0.001 (0.051)	0.002 (0.051)
Branch	0.034 (0.020)	0.033 (0.020)	0.033 (0.020)
Company	0.171*** (0.015)	0.170*** (0.015)	0.172*** (0.015)
Position	0.089 (0.047)	0.089 (0.047)	0.086 (0.048)
Experience	0.287*** (0.048)	0.284*** (0.049)	0.282*** (0.049)
CI	0.108*** (0.035)	0.098** (0.036)	0.120** (0.051)
TT		0.037** (0.016)	
MT			-0.052** (0.021)
CI X TT		0.028* (0.014)	
CI X MT			-0.018*** (0.004)
F-test	57.12***	47.44***	47.54***
R-squared	0.475	0.479	0.480
Adj R-squar	0.466	0.469	0.470
Obs	579	579	579

***,**,* indicate significant at 10%, 5% and 1% levels of significance respectively, standard errors are in parenthesis ( ).

With CI as the independent variable and conditioning all other BP determinants such as age, educational background, company, experience and CI, the results in models 2 of table 6 show that TT and the interaction of CI and TT are significant with positive coefficients of 0.037 and 0.028 respectively. Consequently, with CI as the independent variable and conditioning all other BP determinants such as gender, age, educational background, company, experience and CI, the results in models 3 of table 6 show that MT and the interaction of CI and MT are significant but with negative coefficients of 0.052 and 0.018 respectively. According to table 6, TT significantly moderates and strengthens the relationship between CI and BP but MT significantly weakens the relationship.

Table 7 : Moderating role of ET on the relationship between JPS and BP

Variable	Business performance		
	Model 1	Model 2	Model 3
Constant	1.828*** (0.309)	1.783*** (0.342)	1.786*** (0.337)
Gender	0.135* (0.067)	0.113 (0.068)	0.142** (0.067)
Age	0.307*** (0.044)	0.306*** (0.043)	0.286*** (0.044)
Educational background	0.168*** (0.055)	0.157*** (0.055)	0.167*** (0.055)
Region	0.004 (0.052)	0.003 (0.052)	0.001 (0.051)
Branch	0.035 (0.020)	0.034 (0.020)	0.034 (0.020)
Company	0.172*** (0.015)	0.171*** (0.015)	0.176*** (0.015)
Position	0.101** (0.048)	0.102** (0.048)	0.093* (0.047)
Experience	0.303*** (0.049)	0.297*** (0.049)	0.301*** (0.048)
JPS	0.022** (0.009)	0.050** (0.021)	0.100** (0.046)
TT		0.066* (0.031)	
MT			-0.038* (0.019)
JPS X TT		0.018** (0.007)	
JPS X MT			-0.025** (0.012)
F-test	55.25***	46.05***	46.82***
R-squared	0.466	0.472	0.476
Adj R-squar	0.458	0.462	0.466
Obs	579	579	579

***,**,* indicate significant at 10%, 5% and 1% levels of significance respectively, standard errors are in parenthesis ( ).

Employing JPS as the independent variable and conditioning all other BP determinants such as age, educational background, company, position, experience and JPS, the results in models 2 of table 7 show that TT and the interaction of JPS and TT are significant with positive coefficients of 0.066 and 0.018 respectively. Again, using JPS as the independent variable and conditioning all other BP determinants such as gender, age, educational background, company, position, experience and JPS, the results in models 3 of table7 show that MT and the interaction of JPS and MT are significant but with negative coefficients of 0.038 and 0.025 respectively. According to table 7, whilst TT significantly moderates and strengthens the relationship between JPS and BP, MT significantly weakens it.

Table 8 : Moderating role of ET on the relationship between LTP and BP

Variable	Business performance		
	Model 1	Model 2	Model 3
Constant	1.689*** (0.304)	1.513*** (0.348)	1.1835*** (0.348)
Gender	0.141** (0.066)	0.121 (0.067)	0.141** (0.067)
Age	0.294*** (0.043)	0.294*** (0.043)	0.282*** (0.044)
Educational background	0.164*** (0.055)	0.151*** (0.055)	0.163*** (0.055)
Region	0.005 (0.051)	0.004 (0.051)	0.005 (0.051)

Variable	Business performance		
	Model 1	Model 2	Model 3
Branch	0.028	0.027	0.026
	(0.020)	(0.020)	(0.020)
Company	0.169***	0.168***	0.170
	(0.015)	(0.015)	(0.015)
Position	0.099**	0.100**	0.096**
	(0.047)	(0.047)	(0.047)
Experience	0.298***	0.293***	0.293***
	(0.048)	(0.048)	(0.048)
LTP	0.085***	0.112**	0.098*
	(0.031)	(0.052)	(0.049)
TT		0.104**	
		(0.047)	
MT			-0.047**
			(0.021)
LTP X TT		0.026*	
		(0.013)	
LTP X MT			-0.017**
			(0.008)
F-test	56.75***	47.22***	47.20***
R-squared	0.473	0.478	0.478
Adj R-squar	0.465	0.468	0.468
Obs	579	579	579

***,**,* indicate significant at 10%, 5% and 1% levels of significance respectively, standard errors are in parenthesis ( ).

Using LTP as the independent variable and conditioning all other BP determinants such as age, educational background, company, position, experience and LTP, the results in models 2 of table 8 show that TT and the interaction of LTP and TT are significant with positive coefficients of 0.104 and 0.026 respectively. In the same vein, using LTP as the independent variable and conditioning all other BP determinants such as gender, age, educational background, company, position, experience and LTP, the results in model 3 of table 8 show that MT and the interaction of LTP and MT are significant with negative coefficients of 0.047 and 0.017 respectively. According to table 8, TT significantly moderates and strengthens the relationship between LTP and BP but MT weakens it.

Table 9 : Moderating role of ET on the relationship between TBCRM and BP

Variable	Business performance		
	Model 1	Model 2	Model 3
Constant	1.562***	1.318***	1.455***
	(0.294)	(0.324)	(0.338)
Gender	0.120	0.105	0.128*
	(0.065)	(0.066)	(0.065)
Age	0.275***	0.272***	0.263***
	(0.043)	(0.043)	(0.043)
Educational	0.150***	0.140**	0.149***
background	(0.054)	(0.054)	(0.053)
Region	0.001	0.001	0.007
	(0.050)	(0.050)	(0.050)
Branch	0.028	0.028	0.025
	(0.020)	(0.019)	(0.019)
Company	0.171***	0.172***	0.169***
	(0.015)	(0.015)	(0.015)
Position	0.089	0.097**	0.086
	(0.046)	(0.046)	(0.046)
Experience	0.299***	0.296***	0.293***
	(0.047)	(0.047)	(0.047)
TBCRM	0.185***	0.258***	0.285***
	(0.031)	(0.067)	(0.067)
TT		0.138**	
		(0.061)	
MT			-0.043*
			(0.018)
TBCRM X TT		0.032*	
		(0.016)	
TBCRM X MT			-0.030**
			(0.014)
F-test	62.52***	51.84***	52.33***
R-squared	0.497	0.501	0.504
Adj R-squar	0.489	0.492	0.494
Obs	579	579	579

***,**,* indicate significant at 10%, 5% and 1% levels of significance respectively, standard errors are in parenthesis ( ).

Employing TBCRM as the independent variable and conditioning all other BP determinants such as age, educational background, company, position, experience and TBCRM, the results in models 2 of table 9 show that TT and the interaction of TBCRM and TT are significant with positive coefficients of 0.138 and 0.032 respectively. In the same way, using TBCRM as the independent variable and conditioning all other BP determinants such as gender, age, educational background, company, experience and TBCRM, the results in models 3 of table 9 show that MT and the interaction of TBCRM and MT are significant but with negative coefficients of 0.043 and 0.030 respectively. According to table 9, whilst TT significantly moderates and strengthens the relationship between TBCRM and BP, MT significantly dampens it.

Moderating Graphs

Figures 2.11 present linear graphs indicating how environmental turbulence (technological and market turbulence) strengthens and weakens the relationships between all the customer relationship management (CRM) construct and business performance (BP) respectively. The moderating effects were statistically significant. As indicated in the graphs, higher values of environmental turbulence are represented with red lines depicting high relationships among the innovation capability constructs and business performance while lower values of environmental turbulence represented with blue lines showing low relationships among the variables. Thus, technological turbulence strengthens but market turbulence weakens the relationships between CRM and BP.

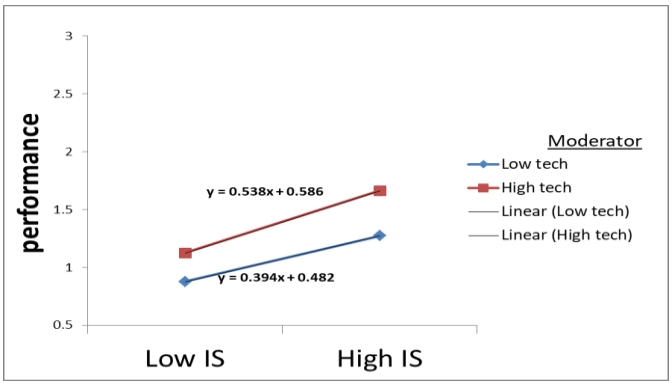

Fig. 2: The moderation role of TT on the relationship between IS and BP

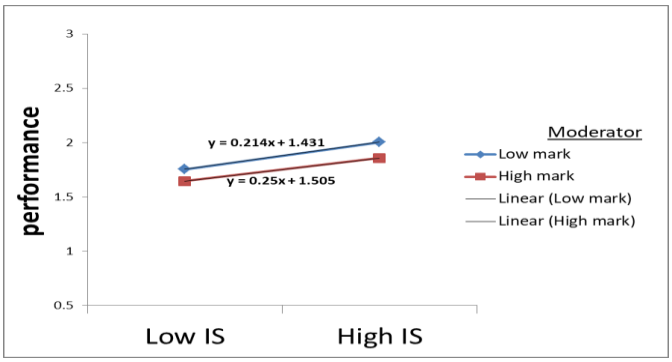

Fig. 3: The moderation role of MT on the relationship between IS and BP

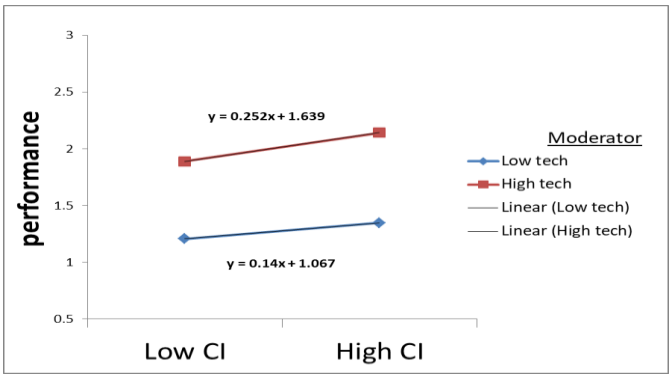

Fig. 4: The moderation role of TT on the relationship between CI and BP

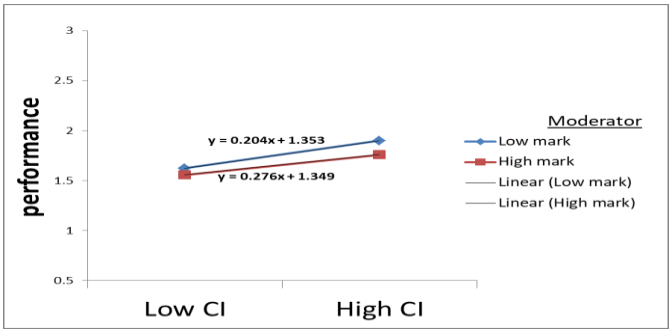

Fig. 5: The moderation role of MT on the relationship between CI and BP.

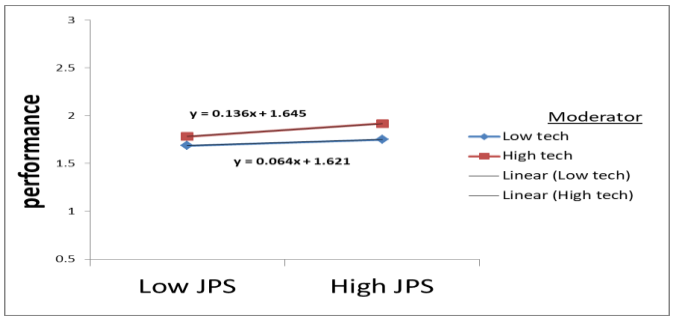

Fig. 6: The moderation role of TT on the relationship between JPS and BP.

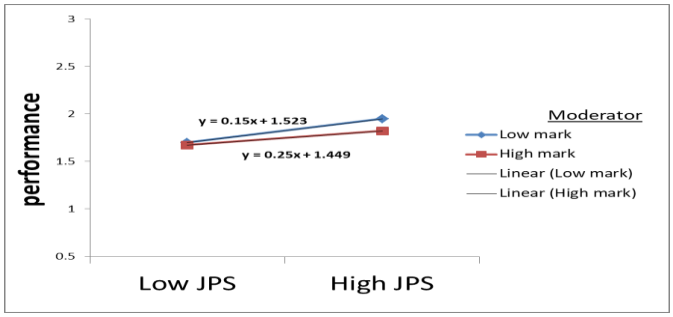

Fig. 7: The moderation role of MT on the relationship between JPS and BP

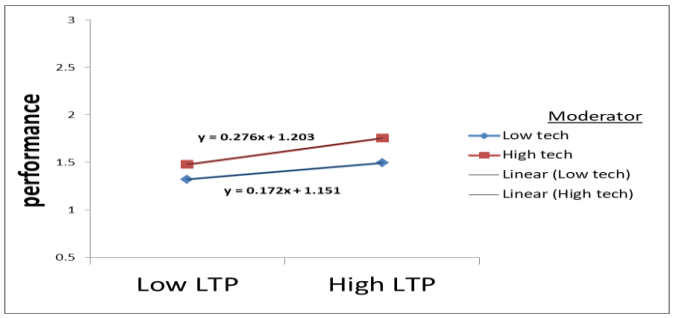

Fig. 8: The moderation role of TT on the relationship between LTP and BP.

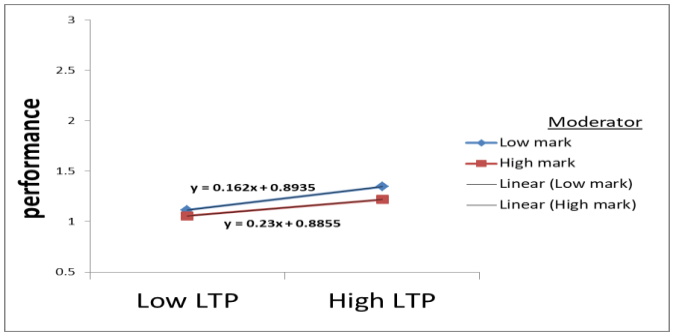

Fig. 9: The moderation role of MT on the relationship between LTP and BP

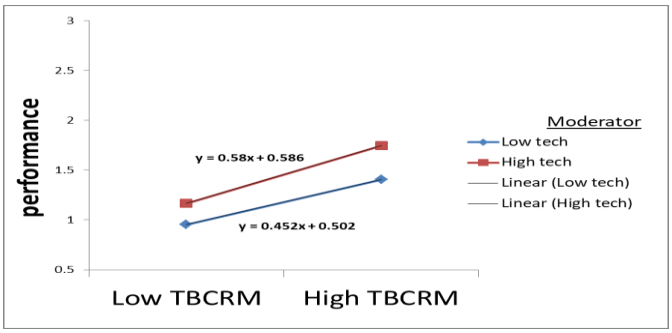

Fig. 10: The moderation role of TT on the relationship between TBCRM and BP.

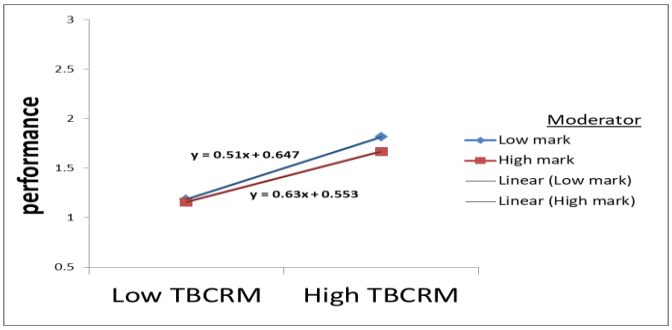

Fig. 11: The moderation role of MT on the relationship between TBCRM and BP

V. DISCUSSIONS OF FINDINGS AND CONCLUSION, RECOMMENDATIONS, CONTRIBUTIONS AND LIMITATIONS

Discussions of findings and conclusion

The primary purpose of this study is to examine the moderation influence of environmental turbulence specifically technological and market turbulence on the relationship between CRM and BP. The authors can state without mixing words that the findings clearly established that all constructs of CRM namely IS, CI, JPS, LTP and TBCRM have a significantly positive impact on BP. This outcome has further confirmed the findings from earlier studies of Tworek & Sałamacha, (2019, Valmohammadi, (2017), Toyese, (2014). However, it contradicts the findings of Jayachandran et al. (2005). The significant effects of CRM on BP may be explained by the fact that the telecommunication sector is a crucial sector since they provide services to a large number of people in the country. Hence, these companies tend to focus much on building an excellent relationship with their

customers which can lead to an improvement in performance. Also due to the fact that most of the companies that make up the Ghana telecommunication sector have a well-recognized and corporate marketing department that deals with the changes in the customers' preferences and needs and address them on time.

Environmental turbulence namely technological and market turbulence were presumed to moderate the intensity of the relationships between CRM and BP. The findings indicated that TT positively moderates the relationship between CRM and BP. Base on the above results, the hypotheses, H2a which states that TT positively moderates the relationship between CRM and BP is accepted. The results were achieved because in a market situation characterized as highly technological turbulent, the relationship between CRM and BP tends to be significant and stronger. This is to say that in a rapidly changing technological environment, businesses with intense CRM practice tends to promote and improve BP in the telecommunication sector. Similarly, in an environment characterized by market turbulence, the existing relationship between CRM and BP tends to be weaker. In light of the above results, H2b which states that MT moderates the relationship between CRM and BP is rejected. Based on these findings, we can state that organizations working in the telecommunication sector can perform better where, preference of the customers, their needs and government regulations do not change rapidly. These outcomes are similar to that of Turulja & Bajgoric, (2019), Tworek & Sałamacha, (2019), Abbas & Hassan (2018), Faridah and Yuserrie, (2017), Abbas & Hassan (2017).

In conclusion, we can therefore that, CRM entails getting close to customers, understanding their needs and preferences, and figuring out how to profitably satisfy those needs. Satisfied and loyal customers tend to lower marketing costs and increased profit. The ability to build close relationships with customers is an organizational capability that companies must have to improve their performance. It is established in this study that CRM has an influence on BP. Also, TT strengthens the relationship between CRM and BP in a rapidly changing technological environment but MT weakens the relationship between the two in a market characterized by high market turbulence in the Ghana telecommunication sector.

Recommendation

Base on the findings, it can be stated that different dimensions of CRM including IS, CI, JPS, LTP and TBCRM system increase business performance. Also, businesses that want to meet their planned performance must put customers first to ensure greater knowledge about them to help satisfy their needs. Therefore, we recommend that managers and policymakers should establish and implement effective CRM strategies to improve performance. It is also recommended that managers and policymakers looking for business continuity and excellent performance much pay attention to the rapidly changing environment.

VI.CONTRIBUTIONS

The finding of this study is similar to the previous researches mentioned above. However, limited studies have been conducted on CRM and its relationship with BP in the context of ET in Africa especially in Ghana's telecommunication sector. These findings contribute immensely to literature and knowledge by indicating which moderating ET significantly strengthens and weakens the existing relationship between CRM and BP within the Ghanaian telecommunication sector which no researcher has conducted. Again, the outcome of this study will prompt businesses to make more informed and effective decisions regarding CRM and the environments in which they operate for gaining better performance. Also, the findings of this study have added to the literature by further confirmed the

relationships that exist between CRM and BP in the Ghana telecom sector.

VII. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

This study has deepened the theoretical and empirical research on CRM, BP and ET. However, there are limitations. First, this research used only TT and MT to test the moderating effect of ET on the association of CRM with BP. Future research can include competition intensity which may change or confirm the outcome of these studies. Secondly, this study was done in a particular country (Ghana) and specifically in the telecom sector, which limits the generalizability of the findings. Future studies using data from different countries may additionally assist increase the generalizability of our findings. Also, our data is cross-sectional. Cross-sectional research suffers from incapacity to determine the causes and effects of the investigated variables. Even though the hypothesized causal ordering is theoretically possible, the cross-sectional layout limits our capability to draw causal inferences. Future studies therefore should use longitudinal data to increase confidence within the causal nature of the relationships examined in this study.

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Cite this article as :

Samuel Gyedu, Tang Heng, Michael Verner Menyah, Junior Oti-Frimpong, "The Moderating Effect of Environmental Turbulence on the Relationship Between Customer Relationship Management and Business Performance", International Journal of Scientific Research in Science, Engineering and Technology (IJSRSET), Online ISSN : 2394-4099, Print ISSN : 2395-1990, Volume 8 Issue 2, pp. 87-105, March-April 2021. Available at doi : https://doi.org/10.32628/IJSRSET218218
Journal URL : https://ijsrset.com/IJSRSET218218