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The Impact of Customer Relationship Management on Business Performance : The Mediating Effect of Innovation Capability

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ABSTRACT

The motivation of this research is to assess the relationship existing between Customer Relationship Management (CRM) and Business Performance (BP) alongside the mediating effect of Innovation Capability (IC) as a crucial study in the telecommunication sector in Ghana. The proposed model was blueprinted based on relationship marketing theory, innovation theory, resource-based view theory and related literature of CRM as an independent variable, Business Performance as an independent variable and Innovation Capability as a mediating variable. Data was collected from 579 various departmental heads, branch managers and the permanent staff of six mobile communication companies in Ghana turned out to be analysed by the use of multiple linear regression analysis and Structural Equation Model (SEM). The analysis of the study was enacted by using STATA and AMOS statistical software package to excerpt the results. The results indicated a statistically positive and significant relationship among CRM, innovation capability and business performance. Also, it was found that innovation capability has a significantly positive and partially mediating effect on CRM constructs and business performance.

Keywords: Customer Relationship Management, Innovation Capability, Business Performance, Telecommunication Sector.

NOTE:

CRM = Customer Relationship Management	AI = Administrative Innovation
	IS = Information Sharing
IC = Innovation Capability	CI = Customer Involvement
BP = Business Performance	JBS = Joint Problem Solving
P/SI = Product/service Innovation	LTP = Long Term Partnership
PI = Process Innovation	TBCRM = Technology Based C
MI = Market Innovation	

I. INTRODUCTION

In recent times, scholars and strategic management acknowledge innovation as an essential catalyst for businesses to create value, enjoy a competitive advantage in a multiplex and changing environment. Businesses with the greatest innovation capability are more triumphant in these nexus environments which permit them to attain the best performances. Innovation is extremely critical for organizations looking for business continuity and sustainability in the market within the long term (Nada, 2016). However, the innovation operation depends steadily on CRM (Vallabh, Radder & Venter, 2015). Valabh, et al, (2015), claimed that CRM is a requirement of innovation and competitiveness. CRM is a strategy that helps businesses to use people and technology to manage and control the relationship with customers to improve performance. Nowadays the paramount and the terminal goal of every business is to build long-term customer relations and loyalty and to come out with innovative strategies by intensifying customer value from their products or services (Valmohammadi 2017). CRM and innovation are basic methods to enhance productivity, profitability and to compete in the marketplace to establish great recognition in customers' notion (Lin et al., 2010). Innovation, customer focus and business performance have grown to be fundamental philosophies for current businesses looking for competitive advantage. CRM is realized as an element for improvement in innovation capability and competitive advantage within the market for excellent business performance (valmohammadi, 2017; Toyese, 2014).

Despite company sharing information with customers, build up long-term customer relations and loyalty and solving problems jointly may also require to possess excellent innovation capabilities as a management tool to attain excellent business performance. Even though present literature has admitted the significance of CRM and innovation capability, however, they suffer inadequacy in addressing how they work together to obtain better business performance. Again, earlier conceptual works have advocated that CRM ensures a company's innovation capability but the empirical proof is sparse. Moreover, a few studies have addressed to what extent does innovation capability moderates the relationship between CRM and business performance (Bambang et al, 2018; Nurita. & Junaidah, 2018; Agyapong, et al., 2017; Battor, & Battor, 2010). This study aims to fill these gaps in literature.

Based on this, the present study attempts to examine (1) the existing relationship among CRM, IC and BP. (2) the mediation effect of IC on the relationship existed between CRM and BP in the case of the Ghana telecommunication industry from the relationship marketing theory, resource-based view theory, and innovation theory.

The remaining of the study is treated in this manner: section two (2) looks at relevant literature, section three (3) deals with methodology. This includes participants, measures, data collections and data analysis. Section four (4) discusses results, discussions and conclusion. It presents results based on research objectives. Finally, section five (5) gives the policy recommendations, contributions and limitations.

II. Literature Review

2.1 Customer relationship management (CRM)

In today's competitive world, CRM is seen as the most paramount technique to reap a competitive advantage (Al-Azzam, 2016). CRM has grown to be a substantially established device that helps customer-oriented organizations' decisions. Businesses are using CRM to boom income and revenues by specializing in customer retention and loyalty (Mohammed et al., 2014). 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).

2.2 Innovation Capability (IC)

Innovation refers to the establishment of new goods, methods, market and structure of an organization, which means a new combination of resources (Schiuma, 2013; Schumpeter 1934). Innovation capability (IC) is the proficiency that an organization possesses to advance products/services which meet market demands through technology and creating new resources for better performance (Jeng, 2014). According to Joseph Schumpeter's definition, there are four kinds of IC. They are Product/Service innovation (P/SI), Process Innovation (PI), Marketing Innovation (PI) and Administrative Innovation (AI) (Lin et al., 2010; OECD, 2005)

2.3 Business performance (BP)

Business performance (BP) is the total well-being of a business entity according to the results measurable against resources dedicated to attaining predetermined aims (Agwu, 2018). BP is the achievement of a business's strategic desires and objectives (Almatrooshi, et al, 2016). It is the output-input ratio inside the entire business, the degree of target success, and the satisfaction of participants in the firm process. One of the major issues that border business owners and managers is how their business performs in the market, thus BP is seen as a paramount management strategy (Gupta & Wales, 2017).

2.4 Conceptual framework and hypothesis development

Pedron et al (2018) built a conceptual structure in which many facets of CRM are connected to BP. They proofed that CRM can strengthen and enhance BP. Mozaheb, A., et al., (2015) studied the influence of CRM on the performance of SMEs and found a significant effect of CRM on BP. Also, all the various studies in the communication sector, banking sector, hotel and insurance companies in some countries showed a significant positive relationship between CRM and BP (Mohammed et al., 2014; Toyese, 2014). Based on the empirical studies on CRM and BP, we, therefore, hypothesize that:

H1: There is a positive relationship between CRM and BP.

Customer information is a fount of innovative solutions for many companies around the globe. The ability to comprehend customer needs, tastes and preferences lead to innovative products/services. Businesses with innovative strategies are more likely to apply the acquired customer knowledge to continually improve their products/services (Valmohammadi, 2017). Companies that get essential information from customers can increase their innovation capability by meeting the demands of a targeted market (Sin et al., 2005). Accordingly, businesses have to constantly exceed customer expectations to supply pleasant products/services for enhancing service quality (Valmohammadi, 2017; Sofiyabadi, et al., 2015). Current literature has linked CRM practice with the development of innovation capability (Lin et al., 2010). Other studies have also stated that a positive relationship existed between CRM and IC (Valmohammadi, 2017; Sofiyabadi, et al., 2015; Lin et al., 2010). Given this, we, therefore, state that:

H2 : There is a positive relationship between CRM and IC.

One of the exclusive factors that decisively affect the nature and growth of every business is innovation. Innovation plays a critical role in predicting the growth, continuity and global competitiveness of a business (Rujirawanich et al., 2011). The effect that IC exerts on BP has been largely tested and appreciable experiential outcome of positive impact has been accumulated (Battor & Battor, 2010). Saunila (2014)

examined the connection existed between IC and BP within SMEs. They concluded with a strong and positive correlation between the IC and the overall BP. Other studies also have announced a positive relationship between IC and BP (Zacca & Dayan, 2018; Hassan et al., 2017; Kafetzopoulos & Psomas, 2015). Base on the above literature we hypothesize that:

H3: There is a positive relationship between IC and BP.

Innovation is an organizational capability that uses assets with new and modern abilities to create value (Dobni, 2010). Bambang and Noorlailie, (2018) investigated the mediating influence of IC and customer performances on the correlation among seniority-based management and financial performance. Results show that IC and customer performance mediates the relationship between the two. Zehir et al., (2015) found that IC partially mediates market orientation dimensions and export performance. There was partial mediating influence of IC on the relationship that existed among social capital and performance (Agyapon et al., 2017). Technological innovation was found giving a partial mediating effect on the relationship among technological innovation, managing human resources and firm performance of (SMEs) Malaysia (Nurita & Junaidah, 2018). From the above empirical studies, we vehemently hypothesize that:

H4: IC mediates the relationship between customer CRM and BP.

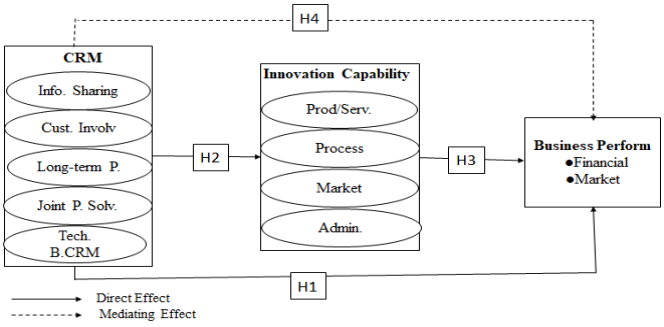

Fig 1 : Hypothesis development of the mediating effect of IC on the relationship between CRM and BP

III. RESEARCH METHODOLOGY

Participants

The participants for this study are the various departmental heads, branch managers and permanent staff of the Ghana telecommunication sector in the Greater Accra, Ashanti and Western Region of Ghana. They include MTN Ghana, VODAFONE Ghana, ARTILETIGO Ghana, GLOBACOM Ghana and ESPRESSO Ghana. Considering the complexity of the sample, we used multiple sampling methods 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) CRM measuring instrument adapted from Valmohammadi, (2017) and Lin et al., (2010) which is a 24 item scale, 5 each measuring IS, CI and TBCRM, 3 items measuring JBS, 6 items measuring LTP); (2) IC instrument adapted from Valmohammadi, (2017) and Lin et al., (2010) a 20 item scale, 5 each measuring P/SI and MI, 6 measuring PI and 4 items measuring AI); (3) BP scale adapted from Sofiyabadi et al,. (2015); Battor & Battor, (2010) which is a 6 item scale which combines both financial and market performance. 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 used in this study. Lin et al., (2010) reported a Cronbach's alpha values of the four IC constructs were 0.88, 0.88, 0.81 and 0.84 respectively. Cronbach's values of the five CRM constructs were 0.95, 0.97, 0.94, 0.94 and 0.81, respectively (Lin et al., (2010). Sofiyabadi et al, (2015) reported Cronbach's alpha of 0.77 for BP. Secondly, the development of the instruments was influenced by the theoretical support of variables under study. Thirdly, they address the multiple natures of these variables. Each item on the scales was measured using a seven-point Likert scale varying from 1 – 7. In line with the literature, the reliability results of this study were consistent with the reliabilities established in the literature, (see table 2).

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 is 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). Also, the model fits results from CFA analysis using AMOS version 22.0 revealed that overall goodness of fits indices including goodness-of-fit index (GFI) 0.951, adjusted goodness-of-fit index (AGFI) 0.939, comparative fit index (CFI) 0.964, root mean square error of approximation (RMSEA) 0.049 and χ^2/df were within the acceptable level for model fit.

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	Product/Service Innovation	P/SI1	0.667	24.640

	IS2	0.737	28.520		P/SI2	0.746	32.660
	IS3	0.753	30.070		P/SI3	0.780	37.190
	IS4	0.647	21.650		P/SI4	0.767	35.370
	IS5	0.637	15.510		P/SI5	0.716	29.330
Customer Involvement	CI1	0.692	24.560	Process Innovation	PI1	0.734	32.030
	CI2	0.675	23.300		PI2	0.779	38.300
	CI3	0.750	29.210		PI3	0.743	33.480
	CI4	0.604	18.740		PI4	0.768	36.700
	CI5	0.634	15.170		PI5	0.706	29.050
Joint Problem Solving	JPS1	0.788	36.700		PI6	0.624	21.840
	JPS2	0.819	39.610	Market Innovation	MI1	0.697	24.560
	JPS3	0.810	38.520		MI2	0.705	25.360
Long Term Partnership	LTP1	0.716	29.060		MI3	0.605	13.870
	LTP2	0.728	30.260		MI4	0.711	25.620
	LTP3	0.779	36.610		MI5	0.642	20.930
	LTP4	0.674	25.060	Administrative Innovation	AI1	0.777	35.060
	LTP5	0.691	26.370		AI2	0.810	39.230
	LTP6	0.641	16.260		AI3	0.741	31.040
Technology Based	TB1	0.640	15.970		AI4	0.679	25.190
	TB2	0.736	29.660	Business Performance	BP1	0.639	21.970
	TB3	0.776	34.080		BP2	0.735	30.170
	TB4	0.736	29.750		BP3	0.697	26.590
	TB5	0.654	22.710		BP4	0.717	28.410
					BP5	0.694	26.230
					BP6	0.699	19.270

IV. METHODS AND MATERIAL

Table 2, shows all Inter-factor Correlations among the variables with Composite Reliability, Mean, Standard Deviation and Average Variance Extracted. The composite reliabilities (CR) were found to be greater than the generally accepted 0.70 and the average variance extracted (AVE) was also greater than 0.50. Furthermore, the square root of the AVE values was higher than their inter-factor correlations. The findings in Table 2 thus revealed that the instruments set are valid and reliable (Gaskin and Lim, 2016: Roldán & Sánchez-Franco, 2012).

Table 2 : Composite Reliability, Mean, Standard Deviation, Average Variance Extracted and Inter-factor Correlations

	CR	Mean	Std. Dev.	AVE	1	2	3	4	5	6	7	8	9	10
IS	0.80	2.523	0.988	.552	**.743**									
CI	0.79	2.658	0.993	.568	.250	**.754**								
JPS	0.85	2.993	1.565	.649	.177	.266	**.806**							
LTP	0.85	2.610	1.154	.579	.181	.113	.216	**.761**						
TBCR	0.81			.581	.252	.193	-.114	.291	**.762**					
M		2.427	1.110											
P/SI	0.86	2.428	1.201	.542	.127	.174	-.136	.118	.277	**.736**				
PI	0.87	2.805	1.244	.529	.199	.186	.102	.191	.161	.281	**.727**			
MI	0.84	2.547	1.226	.531	.154	.197	.187	.174	.154	.147	.161	**.729**		
AI	0.75	2.686	1.257	.567	.152	.170	.180	.181	.198	.119	.189	.260	**.753**	
BP	0.84			.565	.245	.176	.196	.229	.301	.235	.108	.255	.262	**.752**
		2.655	1.132											

V. RESULTS, DISCUSSIONS AND CONCLUSION

Hypothesis Testing

Direct relationships

Table 3 : the relationship between CRM and BP

variable	Business performance	
	Model 1	Model 2
Gender	0.134*	0.125*
	(0.067)	(0.065)
Age	0.305***	0.264***
	(0.043)	(0.042)
Educational background	0.168***	0.169***
	(0.055)	(0.050)
Region	0.002	0.001
	(0.052)	(0.050)
Company	0.173***	0.169***
	(0.015)	(0.015)
Branch	0.034	0.038
	(0.020)	(0.020)
position	0.101**	0.077**
	(0.048)	(0.046)
Experience	0.306***	0.275***
	(0.049)	(0.047)

	IS		0.092**
			(0.037)
	CI		0.076**
			(0.036)
	JPS		0.037*
***,**,*			(0.018)
	LTP		0.83**
			(0.032)
	TBCRM		0.153***
			(0.033)
	F-test	62.17***	45.29***
	R-squared	0.466	0.510
	Adj R-squar	0.459	0.499
	Obs	579	579

indicate significant at 10%, 5% and 1% levels of significance respectively, standard errors are in parenthesis ( ). The results in table 3 show that in model 2, the results reveal that conditioning on other BP determinants such as gender, age, educational background, company, position and experience, IS, CI, JPS, LTP and TBCRM have significantly positive effects on BP. Thus, these results provide further evidence to support hypotheses 1, which hypothesized that CRM exerts positive effect on BP.

Table 4: the relationship between CRM and IC

Variable	Product/service innovation		Process innovation		Marketing innovation		Administrative innovation	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Constant								
Gender	0.178*	0.176*	0.144	0.086	0.031	0.026	0.082	0.026
	(0.097)	(0.098)	(0.095)	(0.104)	(0.097)	(0.101)	(0.100)	(0.103)
Age	0.143**	0.159**	0.155**	0.132**	0.146**	0.158**	0.133*	0.173**
	(0.063)	(0.061)	(0.061)	(0.065)	(0.063)	(0.063)	(0.064)	(0.065)
Educationa l backgroun d	0.124	0.138	0.163**	0.168**	0.131*	0.139*	0.154*	0.147*
	(0.070)	(0.070)	(0.072)	(0.073)	(0.069)	(0.070)	(0.073)	(0.072)
Region	0.102	0.087	0.040	0.119	0.068	0.060	0.118	0.109
	(0.075)	(0.072)	(0.073)	(0.076)	(0.075)	(0.074)	(0.077)	(0.076)
Company	0.129***	0.113**	0.098***	0.103**	0.087**	0.094**	0.082*	0.093**
	(0.041)	(0.043)	(0.039)	(0.046)	(0.040)	(0.044)	(0.041)	(0.045)
Branch	0.001	0.024	0.041	0.031	0.062	0.004	0.021	0.002
	(0.022)	(0.023)	(0.022)	(0.025)	(0.022)	(0.024)	(0.023)	(0.024)
Position	0.183**	0.136*	0.129*	0.050	0.138*	0.137*	0.045	0.014
	(0.069)	(0.067)	(0.066)	(0.076)	(0.069)	(0.068)	(0.071)	(0.076)

Experience	0.174**	0.135*	0.190**	0.185**	0.094	0.118	0.153**	0.155**
	(0.070)	(0.073)	(0.73)	(0.077)	(0.070)	(0.075)	(0.072)	(0.072)
IS		0.148**		0.143**		0.093*		0.101*
		(0.053)		(0.057)		(0.055)		(0.056)
CI		0.137**		0.139**		0.138**		0.106**
		(0.052)		(0.055)		(0.054)		(0.055)
JBS		0.122***		0.066**		0.097**		0.089**
		(0.033)		(0.035)		(0.034)		(0.035)
LTP		0.126***		0.118**		0.120**		0.125**
		(0.045)		(0.048)		(0.047)		(0.048)
TBCRM		0.246***		0.140***		0.103**		0.166***
		(0.048)		(0.051)		(0.050)		(0.051)
F-test	2.56***	4.99***	4.83***	2.41***	3.93***	3.39***	3.56***	3.81***
R-squared	0.035	0.103	0.064	0.053	0.052	0.072	0.051	0.081
Adj R-squar	0.021	0.082	0.050	0.031	0.039	0.051	0.034	0.059
Obs	579	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, models 1, 3, 5 and 7 present the results of the control variables of the IC constructs. The results in model 2 indicate that conditioning all other product/service innovation determinants such as gender, age, company, position and experience, IS, CI, JPS, LTP and TBCRM have a significantly positive effect on P/SI. Also, the results in model 4 show that conditioning all other process innovation determinants such as age, company and experience, IS, CI, JPS, LTP and TBCRM have a significantly positive effect on PI. Again, the results in model 6 indicate that conditioning all other marketing innovation determinants such as age, educational background, company and position, IS, CI, JPS, LTP and TBCRM have a significantly positive effect on MI. lastly, the results in model 8 show that conditioning all other administrative innovation determinants such as age, educational background, company and experience, IS, CI, JPS, LTP and TBCRM have a significantly positive effect on AI. Thus, the results in model 1 to 8 of table 4 provide further evidence to support hypotheses 2, which hypothesized that CRM significantly and positively influences IC.

Table 5: the relationship between IC and BP

Variable	Business performance	
	Model 1	Model 2
Gender	0.134*	0.109*
	(0.067)	(0.064)
Age	0.305***	0.259***
	(0.043)	(0.042)
Educational background	0.168***	0.157***
	(0.055)	(0.053)
Region	0.002	0.027
	(0.052)	(0.050)

Company	0.173***	0.163***
	(0.015)	(0.037)
Branch	0.034	0.037
	(0.020)	(0.019)
Position	0.101**	0.113**
	(0.048)	(0.046)
Experience	0.306***	0.255***
	(0.049)	(0.047)
P/SI		0.101***
		(0.029)
PI		0.073**
		(0.030)
MI		0.066**
		(0.029)
AI		0.100***
		(0.028)
F-test	62.17***	50.18***
R-squared	0.466	0.516
Adj R-squar	0.459	0.505
Obs	579	579

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

The results in model 2 of Table 5 above indicated that conditioning all other BP determinants such as gender, age, educational background, company, position and experience, P/SI, PI, MI and AI have significantly positive effects on BP. Thus, these results provide further evidence to support hypotheses 3, which states that IC exerts a positive effect on BP.

Mediating Effects of IC Constructs

Table 6a: P/SI and PI as a mediator

Variable	Business performance						
		Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Gender	0.0134*	0.086	0.011	0.097	0.081	0.008	0.072
	(0.067)	(0.060)	(0.009	(0.060)	(0.095)	(0.016)	(0.096)
Age	0.305***	0.193***	0.015	0.298***	0.127**	0.024**	0.053*
	(0.043)	(0.038)	(0.06)	(0.039)	(0.059)	(0.010)	(0.060)
Educational	0.168***	0.195***	0.028	0.223***	0.122**	0.022*	0.109**
background	(0.055)	(0.048)	(0.007)	(0.048)	(0.051)	(0.012)	(0.053)
Region	0.002	0.013	0.008	0.021	0.062	0.017	0.044
	(0.052)	(0.044)	(0.007)	(0.048)	(0.069)	(0.012)	(0.070)

Company	0.173***	0.408***	0.031***	0.439***	0.193***	0.071**	0.097**
	(0.015)	(0.026)	(0.004)	(0.028)	(0.038)	(0.026)	(0.040)
Branch	0.043	0.001	0.002	0.001	0.022	0.010	0.027
	(0.020)	(0.014)	(0.002)	(0.018)	(0.014)	(0.009)	(0.015)
position	0.101**	0.182***	0.011	0.193**	0.136***	0.069**	0.116**
	(0.048)	(0.044)	(0.007)	(0.044)	(0.044)	(0.021)	(0.047)
Experience	0.306***	0.215***	0.022***	0.237***	0.115**	0.057**	0.089*
	(0.049)	(0.045)	(0.007)	(0.048)	(0.053)	(0.028)	(0.046)
IS		0.133***	0.006	0.139***	0.139**	0.018**	0.057
		(0.033)	(0.005)	(0.049)	(0.050)	(0.009)	(0.051)
CI		0.084**	0.004	0.088**	0.190***	0.024***	0.194***
		(0.032)	(0.005)	(0.033)	(0.051)	(0.008)	(0.052)
JBS		0.059**	0.002	0.057***	0.045	0.012*	0.012
		(0.020)	(0.003)	(0.020)	(0.032)	(0.006)	(0.033)
LTP		0.080**	0.004	0.084***	0.065	0.016**	0.031
		(0.028)	(0.004)	(0.028)	(0.042)	(0.007)	(0.043)
TBCRM		0.073**	0.024***	0.097***	0.150**	0.025***	0.075*
		(0.030)	(0.008)	(0.038)	(0.043)	(0.009)	(0.043)
P/SI		0.088***		0.088***			
		(0.026)		(0.026)			
PI					0.151***		0.151***
					(0.039)		(0.039)
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 6a above, using product/service innovation as the mediator variable and conditioning on other IC determinants such as age, educational background, company, position and experience, the results in models 2 and 4 show that P/SI as a construct of IC directly and totally respectively mediate the relationship between CRM constructs (IS, CI, JPS, LTP and TBCRM) and BP, while it indirectly mediates the relationship between only TBCRM and BP in model 3. In the same vain, using process innovation as the mediator variable and conditioning on other IC determinants such as age, educational background, company, position and experience, the results in models 5 and 7 of table 6a show that PI as an IC constructs directly and totally respectively mediate the relationship between CRM constructs (IS, CI, TBCRM) and BP, while it indirectly mediates all the relationship between CRM constructs and BP in model 6. This indicates that P/SI and PI have significant and positive mediating effects on the relationship between CRM and BP.

Table 6b: MI and AI as a mediator

Variable	Business performance						
		Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7

Gender	0.134*	0.081	0.012	0.093	0.082	0.012	0.094
	(0.067)	(0.060)	(0.008)	(0.062)	(0.060)	(0.009)	(0.064)
Age	0.305***	0.194***	0.014***	0.208***	0.192***	0.016**	0.208***
	(0.043)	(0.038)	(0.005)	(0.042)	(0.038)	(0.006)	(0.039)
Educational	0.168***	0.191***	0.013**	0.204***	0.181***	0.014*	0.195***
background	(0.055)	(0.048)	(0.006)	(0.051)	(0.048)	(0.008)	(0.049)
Region	0.002	0.016	0.005	0.021	0.011	0.010	0.021
	(0.052)	(0.044)	(0.006)	(0.046)	(0.044)	(0.007)	(0.047)
Company	0.173***	0.402***	0.015***	0.417***	0.402***	0.034***	0.436***
	(0.015)	(0.026)	(0.004)	(0.030)	(0.026)	(0.004)	(0.028)
Branch	0.043	0.004	0.001	0.005	0.003	0.001	0.004
	(0.020)	(0.014)	(0.002)	(0.016)	(0.014)	(0.002)	(0.016)
position	0.101**	0.184***	0.017***	0.201***	0.192***	0.016**	0.208***
	(0.048)	(0.044)	(0.006)	(0.046)	(0.044)	(0.007)	(0.047)
Experience	0.306***	0.218***	0.019***	0.237***	0.222***	0.022**	0.244***
	(0.049)	(0.045)	(0.006)	(0.047)	(0.045)	(0.007)	(0.046)
IS		0.130***	0.010*	0.140***	0.068**	0.011*	0.079**
		(0.033)	(0.005)	(0.053)	(0.033)	(0.006)	(0.034)
CI		0.084**	0.014***	0.098*	0.076**	0.022***	0.098**
		(0.032)	(0.004)	(0.036)	(0.032)	(0.005)	(0.033)
JBS		0.093***	0.013***	0.106**	0.043**	0.014***	0.057**
		(0.020)	(0.003)	(0.020)	(0.020)	(0.003)	(0.022)
LTP		0.083	0.022***	0.105	0.074**	0.013***	0.087**
		(0.028)	(0.004)	(0.029)	(0.028)	(0.004)	(0.029)
TBCRM		0.087***	0.010**	0.097***	0.080***	0.017***	0.097***
		(0.030)	(0.005)	(0.030)	(0.030)	(0.007)	(0.032)
MI		0.076***		0.076***			
		(0.025)		(0.039)			
AI					0.088***		0.088***
					(0.024)		(0.033)
Obs	579	579	579	579	579	579	579

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

VI. CONCLUSION

According to table 6b above, using marketing innovation as the mediator variable and conditioning on other IC determinants such as age, educational background, company, position and experience, the results in models 2 and 4 show that MI as a IC constructs directly and totally respectively mediate the relationship between all CRM constructs (except Long term partnership) and BP, while it indirectly mediates all the relationship between CRM constructs and BP in model 3. This indicates that MI has significant and positive mediating effects on the relationship between CRM and BP. Similarly, using administrative innovation as the mediator variable

and conditioning on other IC determinants such as age, educational background, company, position and experience, the results in models 5, 6 and 7 show that AI as an IC construct directly, indirectly and totally respectively has mediating effects on the relationship between all CRM constructs and BP. This indicates that MI and AI have significant and positive mediating effects on the relationship between CRM and BP.

Tables 6a and 6b presented combined mediating effects of the IC constructs and revealed that all the four IC constructs significantly and partially have mediating effects on the relationship between CRM and BP. These results support hypothesis 4, which hypothesized that IC mediates the relationship between CRM and BP.

VII. Discussions

The relationship between CRM, IC and BP

All the CRM constructs (IS, CI, JPS, LTP and TBCRM) indicated a positive effect on BP contrary to the research findings of Jayachandran et al. (2005). This conclusion is similar to that of Valmohammadi, (2017), Toyese, (2014). TBCRM was the most dominant determinant of CRM in the Ghana telecommunication sector since the sector uses computer technology to facilitate different activities of CRM and actively offer technical aides including data storage, data mining and CRM software systems to their customers (Sin, L.et al., 2005). Also, CRM as a customer-oriented strategy is embedded within the elemental technological capability of the firm. This partially explains why TBCRM was discovered as the most powerful predictor of variations in business performance (valmohammadi, 2017). Again, the results show that different constructs of CRM particularly IS, CI, JPS, LTP and TBCRM had a positive and significant effect on IC. A similar outcome was also found within the following study's findings Valmohammadi, (2017), Seyed and Masoud, (2015), Battor & Battor, (2010). CRM is touted as an imperative approach to enhance a firm's IC and to improve a firm's competitive gain. Lacking from the literature, however, is the knowledge of the way those strategic additives can be integrated (valmohammadi, (2017). The premise of the study is that both CRM constructs and IC are multidimensional principles, for that reason, managers must apprehend how various CRM activities correspond to distinct dimensions of IC (Lin et al., 2010). Also, this study asserted that IC constructs (P/SI, PI, MI and AI) were found to have a significant and positive effect on BP. This recovery is consistent with previous studies of Zacca & Dayan, (2018), Hassan et al., (2017), Kafetzopoulos & Psomas, (2015). Indeed, innovation is a chief strategy hunted by businesses for value creation and gaining competitive power. Organizations with extra potential to innovate are likely to be more successful in responding to their environments and developing new competencies for competitive advantage and better performances. DuPont, Procter & Gamble, General Electric and Visa are all companies whose sustained success owes much to firms' IC (Zacca & Dayan, 2018; Battor & Battor, 2010).

Mediating Effect of IC

The primary motive of this study is to analyse the mediating effects of IC on the existing relationship between CRM dimensions and BP. This study is indispensable since the findings can direct organizations most especially telecommunication areas to discover ways for growth opportunities in these competitive surroundings. This paper shows that CRM is an antecedent to IC and that CRM and IC simultaneously make contributions to the overall BP. The results suggest that IC significantly directly, indirectly and totally mediates the existing relationship between CRM and BP, indicating a positive effect on the variables under study. This finding is similar to research by Bambang and Noorlailie, (2018), Agyapong et al., (2017), Valmohammadi, (2017). This paper has also proved that IC is a lacking hyperlink now not formerly conceptualized in the circumstance of how CRM

contributes to BP. Consequently, in this study in addition to the existing relationship between CRM practices and IC of firms is consistent with the study of Battor & Battor (2010) has been considered. The outcome also supports the mediating effect of IC on the correlation between CRM and BP.

VIII. Conclusion

CRM practices may be seen as a method to study customers' needs and how best to create, satisfy, and sustain customers. It 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. Effective management of customer relationships is a competitive resource within an organization, and the ability to translate that good customer relationship management into innovative products is considered to increase performance (Battor & Battor, 2010). Innovating firms have to create conducive working environment in which innovation can flourish. The ability to build close relationships with customers is an example of the organizational capabilities that the company must have to enhance its ability to innovate (Valmohammadi, 2017). This research suggests that the tested CRM practices apply to grow nations which include Ghana. This is crucial as previous CRM practices had been centred on only western or developed countries

Policy recommendations, contributions and limitations of the Study.

Recommendation

CRM as an imperative strategy is emphasized for growing the business's IC and hence BP. This paper is based on the fact that CRM and IC are multi-dimensional concepts. So, policymakers should pay attention to how different activities of CRM are being related to different dimensions of IC. Considering the points posed in this paper, it can be stated that, in addition to creating recognized competitive advantages, the CRM system results in the improvement of the organization's IC as well as BP. Different dimensions of CRM including IS, CI, JPS, LTP and TBCRM system increase P/SI, PI, MI and AI capabilities. Therefore, managers and policymakers should pay attention to establishing effective CRM to improve IC which will result in the improvement and increment in the organization's performance. It is also recommended that managers and policymakers should embark on building a stronger TBCRM since it has been established in this research that it contributes significantly to IC and BP than any other dimension of CRM. Businesses seeking to meet their planned performance can put customers first to ensure greater knowledge about them in order to satisfying their needs.

IX. Contributions

This study is indispensable since the findings can direct organizations most especially telecommunication areas to discover ways for growth opportunities in these competitive surroundings since it is established that CRM is an antecedent to IC and that CRM and IC simultaneously make contributions to the overall performance. Since most of the studies in this field were done in developed countries, a study in an emerging economy like Ghana can be a fruitful empirical work for future research. Theoretically, unlike the early studies that look at only the relationship between these three variables, this study extends the relationship to include the mediating effect of IC on the relationship between CRM and BP which no researcher has done. Also, the findings of this study have added to the literature by further confirmed the relationships between CRM, IC and BP in the Ghana telecom sector.

Limitations and future research directions

This study has deepened the theoretical and empirical research on CRM, IC and BP. However, there are limitations. First, 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. 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. The third limitation is the fact that only qualitative variables have been considered for the measurement of CRM, IC and BP. Hence, future research could use both the qualitative and quantitative variables to confirm if there are significant and meaningful differences in the results obtained.

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