

Mediating Role of Absorptive Capacity on the Relationship between Foreign Direct Investment and Local Firm's Performance

M. D. Wanjere, X. N. Iraki, M. Ogutu, and M. Kinoti

ABSTRACT

There is little documentation on the role of absorptive capacity on the relationship between FDI and performance of firms. This paper investigates the mediating role of absorptive capacity on the relationship between FDI and performance of manufacturing firms in Kenya. The population of study comprised 100 companies registered with Kenya Association of Manufacturers that had over 10 percent foreign ownership as at the time of data collection in 2019. The respondents were the CEOs of organization or their designated officers. The study used a structured questionnaire to collect primary data. The respondent were required to indicate how the introduction of FDI impacted on organizations capital flow, advanced production technology, marketing expertise and management knowhow. They were also to indicate the extent their Organisation had invested in absorptive capacity and the effect absorptive capacity had on the relationship between FDI and local firm performance. Descriptive and inferential statistics were both used to analyze the data. The results revealed that absorptive capacity has statistically significant mediating effect on the relationship between FDI and firm performance. This imply that an incremental change in the absorptive capacity would generate growth in company's performance. As such Kenyan and other sub-Sahara African countries government need to come up with polices geared to supporting improvement of firms absorptive capacities so as to spur the growth of their key sectors of the economy.

Keywords: Absorptive capacity, Firm Performance, Foreign Direct Investment.

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I. INTRODUCTION

The significance surrounding the notion of absorptive capacity in organization learning began to take recognition in the 1980s. This is evident from the numerous studies that accentuated the critical role played by application of newly found knowledge in leveraging the firm competitiveness. Early researchers like Cohen and Levinthal [1] conceptualized absorptive capacity as the potentiality of an enterprise to identify, integrate, and apply any form of external and valuable knowledge in pursuit of commercial success. Further, Kneller[2] describes absorptive capacity as the capability developed by local organizations, which is crucial for these organizations to make successful use of foreign technology.

More recently Lenart [3] defined absorptive capacity as the ability of firms to use existing information with an emphasis on their capability to transform and assimilate it together with their ability to acknowledge external knowledge as a rightful resource for innovation. Andrea and Carlos [4] supported this by defining absorptive capacity as the dynamic ability that companies had in the processes of acquiring, assimilating, transforming and applying external knowledge in the processes of enhancing their innovative processes. Research on absorptive capacity suggests that innovative organizations

tend to join forces with external actors in the processes of acquiring new knowledge. This may involve acquiring knowledge from external sources that are outside firms' foundations. During this process, organizations are able to improve their learning processes and competitive advantages [5].

Onyekwena [6] asserted that knowledge spillover from advanced industrial economies to developing economies require that local capabilities be present in host countries. It is also noted that foreign direct investment activity takes places within an organizational setting, such as firms. The implication of this is that the knowledge resources also referred to as absorptive capacity available within such organizations plays a significant role in facilitating successful knowledge and technology spillover from foreign firms. Lau and Lo [7] further noted that absorptive capacity is considered a crucial part of the learning system as it provides the potentiality to transform the knowledge base of an organization through acquisition, assimilation, reshaping and capitalization processes giving the firm real adaptive capacity.

The study operationalized absorptive capacity as a system constituting of firm's ability to acquire, assimilate, transform and exploit. The internal system that constitutes the absorptive capacity within firms enable firms to make use of newly developed technologies. This is in line with the

knowledge based theory that considers knowledge as the most strategic resource and dynamic capabilities theory that stress integration, reconfiguration and renewal of resources. The study adopted the four variables of acquisition, assimilation, transformation and exploitation to operationalize absorptive capacity.

A. Kenya's Manufacturing Sector

The Kenyan manufacturing industry is part of the key agenda in the Kenya Government transformation program. With a GDP contribution of 9.5% in 2018, the sector is at the heart of Kenya industrialization policy and provide the best entry point for FDI. However, the level of investment realized in this sector is still very low and credit to the sector declined by 4.6% Ksh 277.4 billion in 2016 from Ksh 290.9 billion in 2015 [8].

Despite the importance of the manufacturing sector for the Kenyan economy and the important role played by the absorptive capacity in facilitating FDI spillover, the mediating effect of absorptive capacity in the relationship between FDI and firm performance has not been systematically studied making sector a suitable for this study. The study will analyze the effect of absorptive capacity in the relationship between FDI and local firm's performance.

II. RELATED LITERATURE

The breadth of empirical base touching on the link between FDI and firm performance has to a large extent indicated inconclusive results attributable to isolated study of foreign direct investment and ignoring other variables that could impact the relationship. Asuantri and Yasmin [9] established that foreign direct investment and absorptive capacity have no significant effect on technological innovation when estimated separately but yields significant positive effect on technological innovation when their interaction considered. This imply that learning process occurs when local firms intermingle with MNEs and is made possible by absorptive capacity of the local firms. The position is supported by Leman and Ismet [10] study which established that innovation attributable to FDI inflows increase with increase in absorptive capacity in host countries.

Rueda and Shamsub's study (as cited in [9]) explained that countries do not achieve the same level of success in transforming technologies into innovation even where they receive the same technology. Further, they established that FDI impacted the survival of indigenous firms positively in top performing tech firms and none on those in low-tech industries meaning that local firms with relatively higher absorptive capacity gain more from FDI than other firms. Ricardo, Luisa and Simona [11] noted that foreign direct investment had positive implications on the performance of local companies and contended that the capacity of local companies to assimilate fresh knowledge was a key ingredient for them to capitalize on FDI. The efficacy levels of companies shape their absorptive capacity particularly in relation to new technology implying that the companies' ability to seamless integrate new technologies in their operations rested on their level of productivity [12].

In their work, Thorbecke and Wan [13] stressed on the gravity of building absorptive capacities in that it creates

linkages and spillovers from FDIs in the economic development of East Asian countries. The lessons from several East Asian countries have shown that staff training and other education programmes ensure acquisition and application of new technology. Besides there is evidence that highlights the significance of thoughtful action to advance absorptive capacity within firms [13]. Chang, Gong, Way and Jia [14] asserted that organizational ability to learn from past experiences together with flexible staff management practices may be used to explain the differences in firms' performance. Anwar and Nguyen [15] study of the Swiss and Vietnam manufacturing respectively found proof of spillover from FDI activities to local firms with adequate levels of absorptive capacity.

Lau and Lo [7] argues that a firm must take steps aimed at enhancing absorptive capacity in order to improve its innovation performance. They noted that research and development activity is a spur for innovation industries and greater research and development investment support better adoption of new technologies in design and innovation of new products. Kneller and Stevens [16] noted that a country needs to possess sufficient levels of absorptive capacity to fully benefit from the technology content of imported intermediate inputs. Li [17] demonstrated that Chinese companies utilized local research and development efforts to drive the capacity of the local companies to integrate foreign technological know-how in their operations.

Blalock and Gertler [18] studied the Swiss manufacturing firms and found that companies with comparatively sufficient absorptive capacities were more poised to gain from spillovers. Similar evidence was adduced by Anwar and Nguen [15]. Codjoe [19] asserted that although local companies may face major obstacles in their ability to make huge investments in innovation and research and development activities, it is of vital importance, that an internal mechanism exist that governs the firm ability to integrate new technologies into the operations of a company. Wanjere and Yabs [20] observed that absorptive capacity is a powerful tool to upgrade the efficiency of the firms, gain more from MNEs spillovers and improves their competitive advantage. Cohen and Levinthal [1] asserted that organizations that carry out their own research and development are better placed to exploit and replicate outside knowledge than companies devoid of R&D initiatives. a and Saggi [21], and Kinoshita [22] as cited in Damgaard [23] observed that productivity spillovers and the technological gap are contrariwise associated meaning that highly productive local firms gain more from foreign direct investment.

Absorptive capacity has been progressively researched the objective of such study being the belief that positive FDI spillover to domestic economies depends on their capacity to exploit the opportunity. This reflects a promising phase for renewed interest in the uncovering of the interplay between FDI and performance, which is imperative owing to the contingency of outcomes. Therefore, these two variables can be combined to propose that foreign direct investment influences absorptive capacity that in turn influences firm's performance. From this, we can infer that absorptive capacity mediates the link between FDI and performance.

III. CONCEPTUAL FRAMEWORK AND HYPOTHESIS

A. Conceptual Framework

Kombo and Tromp [24] noted that conceptual framework denotes a set of broad thoughts and values extracted from relevant spheres of study and adapted in configuring a subsequent presentation. The conceptual framework was established on a diverse theoretical underpinning including FDI theories, dynamic capabilities, knowledge based and resource dependence. The study conceptualized the link between FDI and firm performance as mediated by the absorptive capacity of the firm. The framework is illustrated in Fig. 1.

B. Conceptual Hypotheses

The study was guided by the following hypotheses:

Hypothesis: Absorptive capacity has no significant mediating effect on the relationship between FDI and performance of manufacturing firms in Kenya.

IV. METHODOLOGY AND DATA

This research adopted a correlational design to evaluate relationship among variables. The study population consisted of all the 100 manufacturing firms registered with KAM and that had over 10% foreign investment in Kenya. The firm was the principal unit under investigation. The data was collected from one member of the top management preferably CEO or the finance and strategy director who were considered knowledgeable about the issue under investigation; as such, they were the key informants. Their choice is consistent with similar studies conducted by Shabarati, Jawad and Bontis [25] and Cabrita and Bontis [26] who claim top managers are knowledgeable about organizational characteristics.

Both descriptive and inferential statistics were utilized to analyze the data. Descriptive statistics was computed to represent general information and firm characteristics [27]. Additionally, a series of regression analyses was conducted to assess the relationship between the independent and dependent variables to determine whether the results are significant or not. Table I provides a summary of the hypothesis test and analytical procedures.

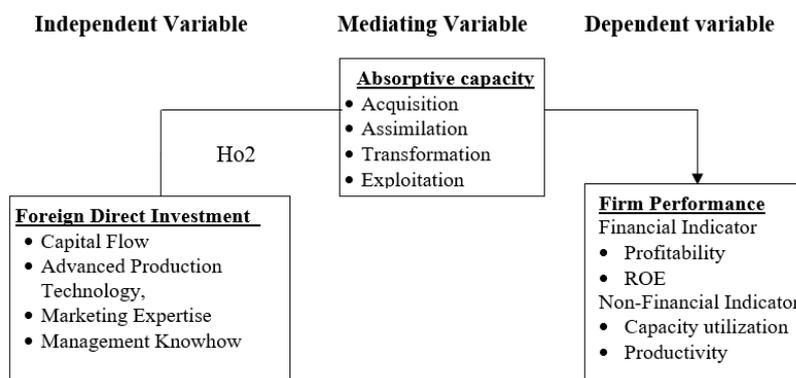


Fig. 1. Conceptual Model. Source: Researcher 2017.

TABLE I: OBJECTIVES, HYPOTHESES, TESTS AND ANALYTICAL MODELS

Objective	Hypothesis	Hypothesis Test	Analytical model
Objective : Determine the mediating role of absorptive capacity on the relationship between FDI and n firm performance.	H2: Absorptive capacity has no significant mediating effect on the relationship between FDI and firm performance.	Mediation Methodology: (Baron and Kenny (1986). Hierarchical regression analysis Step 1: $FP = \beta_0 + \beta_1 FDI + \epsilon$ Step 2: $FP = \beta_0 + \beta_1 FDI + \beta_2 AC + \epsilon$ Where, $\beta_0 = \text{Constant}$, $\beta_1, \beta_2 = \text{Regression coefficient}$ FP = Firm performance FDI = composite index of Foreign Direct Investment AC = composite index of Absorptive capacity, $\epsilon = \text{Error term}$	The value of adjusted R^2 will show variation in firm's performance explained by FDI F ratio will show the overall robustness and significance of the model Reject H_0 if $p > 0.05$ Some form of mediation is supported when FDI is no longer significant when AC is controlled

V. PRELIMINARY ANALYSIS

A. Diagnostic Test

The data was checked for normality and multicollinearity before proceeding with regression analysis. The model must meet the conditions of normal distribution and absence of multicollinearity. Violation of these assumptions puts the researcher at the risk of producing misleading estimates [28].

1) Normality Tests

Normality test is used to assess whether data matches a normal distribution. Variables that exhibit significant deviations from normality are likely to alter relationships.

McCabe, Moore and Craig [29] posited that the tests for normality is very essential in determining whether or not the data collected was modelled properly by a normal distribution. Normality of data was established using histograms. Miot [30] posited that a good and decent data used in research is that which can be said to be normally distributed. The results of the normality test are presented in the proceeding section.

1.1) Histogram Graphs for Normality of Responses

1.1.1) Foreign Direct Investment

Fig. 2 displays a symmetrical histogram, an indication that FDI was normally distributed. Specifically, the variable followed a normal distribution with a mean equal to 2.46 and

standard deviation of 0.311. As such, it was concluded that the foreign direct investment variable met the normality condition.

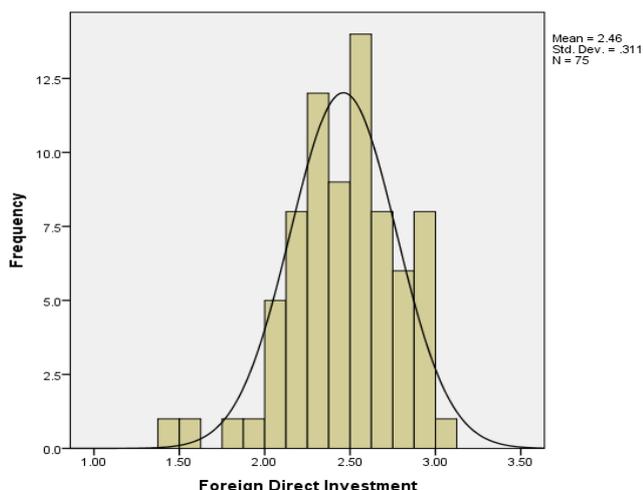


Fig. 2. Histogram of Foreign Direct Investment. Source: Field Data 2019.

1.1.2) Absorptive Capacity

Fig. 3 is a symmetrical histogram indicating that the mediating variable absorptive capacity provided responses that upon exploring for normality showed that the distribution of responses for the variable was normal or bell-shaped with a mean equal to 3.81 and standard deviation of 0.507. It was thus concluded that the absorptive capacity variable fulfilled the normality pre-condition.

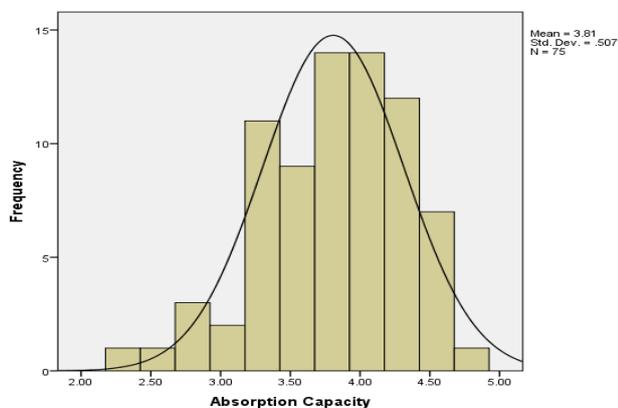


Fig. 3. Histogram of Absorptive Capacity. Source: Field Data 2019.

1.1.3) Manufacturing Performance

The manufacturing performance variable was investigated for normality using histogram and results of analysis presented in Fig. 4 below.

Fig. 4 is a symmetrical histogram indicating that the independent variable Manufacturing Performance was normally distributed as the histogram was bell-shaped with a mean equal to 2.77 and standard deviation of 0.52.

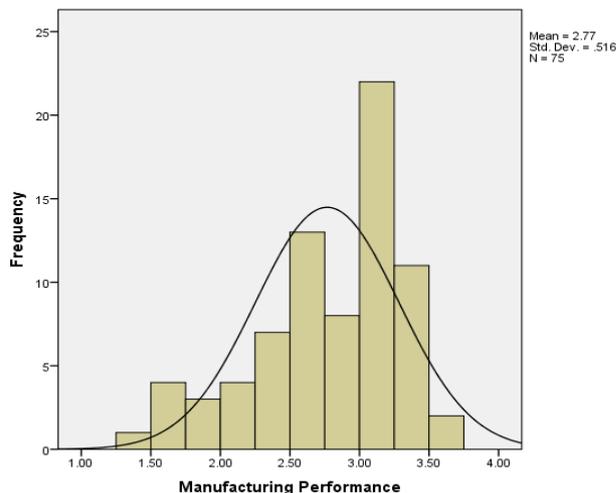


Fig. 4. Histogram Of Firm Performance. Source: Field Data 2019.

2) Multicollinearity Test

Multicollinearity occurs when there are multiple explanatory variables that exhibit high degree of correlations [31], [32]. To check for this precondition, the variance inflation factor (VIF) test was invoked with a VIF exceeding 10 indicating multicollinearity [33].

TABLE II: COLLINEARITY STATISTICS

Variable	Collinearity Statistics	
	Tolerance	VIF
Foreign Direct Investment	0.984	1.016
Absorption Capacity	0.988	1.012

Dependent Variable: "Manufacturing Performance.
Source: Field Data (2019)

Table II shows that for the two variables of interest, the VIF ranged from 1.012 to 1.016. The values being more than 1 and less than 10 indicate that there was absence of multicollinearity. Additionally, the tolerance values for all the variables ranged from 0.984 to 0.988 further confirming non-violation of the precondition.

3) Homogeneity Tests

Homoscedasticity assumption means that standard deviation and variance of errors about the regression line is unvaried for all the explanatory variables [34]. The levene test was used to assess this precondition by examining whether or not there is no equality in the variances of the two populations is true [33]. The test was done on a 5% significance level and results are as shown in Table III.

TABLE III: LEVENE TEST STATISTICS

Variable	Levene Statistic	df1	df2	Sig.
Foreign Direct Investment	2.733	12	58	0.005
Absorption Capacity	1.110	12	58	0.370

Source: Field Data (2019).

Table III shows that out of the two variables, only absorption capacity had a p-value greater than 0.05. Therefore, the null hypothesis that the data for absorption capacity did not fulfil the homoscedasticity condition was rejected. It was also concluded on the basis of the p-values that foreign direct investment did not meet the precondition.

B. Descriptive Statistics

Descriptive statistics were useful in this study as they presented quantitative data in a manageable form. The findings are presented in the next section.

1) Foreign Direct Investment

In this study FDI was conceptualised using four variables namely: capital flow, advanced production technology, marketing expertise and management knowhow as guided by Muhammad and Kashif [35] and Leman and Ismet [10]. The respondents were required to respond by indicating if FDI introduction led to certain activities associated with the capital flow, advanced production technology, marketing expertise and management knowhow in their organizations. The findings are presented in Table IV.

TABLE IV: FOREIGN DIRECT INVESTMENT

Variables	N	Mean	Std. Deviation	Variance	CV
Capital Flow	75	2.68	0.70	0.49	0.26
Advanced production Technology	75	2.31	0.86	0.75	0.38
Marketing Expertise	75	2.43	0.86	0.76	0.31
Management Knowhow	75	2.46	0.86	0.74	0.30
Overall FDI	75	2.47	0.82	0.685	0.3125

Source: Field Data (2019).

The overall ranking for FDI was a mean score of 2.47, std deviation of 0.82, variance of 0.68 and CV of 0.3125. On specific variable, the highest ranked was capital flow with a score (mean scores above 2.68, standard deviation of 0.70, Variance of 0.49 and CV of 0.026), followed by management knowhow with scores of (mean scores of 2.46, standard deviation of 0.86, Variance of 0.7 and CV of 0.30), then marketing expertise with mean scores above 2.43, standard deviation of 0.86, Variance of 0.7 and CV of 0.31) and finally advanced production technology with a scores of (mean scores above 2.31, standard deviation of 0.86, Variance of 0.7 and CV of 0.38).

2) Absorptive Capacity

This represents the dynamic ability that companies have in the processes of acquiring, assimilating, transforming and applying external knowledge to enhance their innovative processes [4]. Onyekwena [6] noted that this capacity is critical for successful transmission of know-how from industrialized nations to less developed countries. Absorptive capacity was postulated as the mediator in the model and was measured using four variables of acquisition, assimilation, transformation and exploitation. The results are presented on the table below:

TABLE V: ABSORPTION CAPACITY

	N	Mean	Std. Deviation	Variance	Coefficient of Variation
Acquisition	75	3.70	1.12	1.28	0.35
Assimilation	75	3.76	1.08	1.18	0.32
Transformation	75	3.71	0.96	0.97	0.27
Exploitation	75	4.06	0.90	0.81	0.20
	75	3.81	1.02	1.06	0.29

Source: Field Data (2019).

The overall ranking for absorptive capacity was a mean score of 3.81, standard deviation of 1.02, variance of 1.06 and CV of 0.29. On specific variable, the highest ranked was exploitation with a score (mean scores 4.06, standard deviation of 0.90, Variance of 0.81 and CV of 0.20), followed by assimilation with (mean scores 3.76, standard deviation of 1.08, Variance of 1.18 and CV of 0.32), then transformation with mean scores .3.71, standard deviation of 0.96, Variance of 0.97 and CV of 0.27) and finally acquisition with a scores of (mean scores above 3.70, standard deviation of 1.12, Variance of 1.28 and CV of 0.35).

3) Regression Analysis

The researcher set out to test the effect of absorptive capacity on the relationship between FDI and performance of manufacturing firms. The study developed a hypothesis and was tested using simple linear regression analysis. The results from the test of hypothesis are presented in the preceding section.

3.1) The Mediating Role of Absorptive Capacity on FDI and Performance of Manufacturing Firm

As pertains to the objective, the intended goal was to investigate whether intervening force of absorptive capacity would be found operative in the link between FDI and performance. A corresponding hypothesis was put forward which held the following statement:

H₀₂: Absorptive capacity does not have a statistically significant mediating influence on the relationship between FDI and performance of manufacturing firms in Kenya.

The mediating role of absorptive capacity was examined through hierarchical regression models. In the first model, the link between FDI and performance was established. The second model assessed whether or not the combined effect of FDI and absorptive capacity on performance was statistically valid. Manifestation of the intervening forces of absorptive capacity would be attested if the change in R² would be found to be significant.

The coefficients of determination for the first and second model were 0.079 and 0.086, respectively. The implication is that FDI together with absorptive capacity accounted for 8.6 percent change in performance. The associated change in R² was thus 0.007, which was significant. The results further show that overall significance of the model with mediating effects indicated a p-value of 0.039 which was less than 0.05 and on the basis of these results, the hypothesis is not supported and is therefore rejected. It was thus concluded that absorption capacity had a statistically significant mediating effect in the relationship between FDI and performance. As such, the findings were indicative that the intervening forces of absorptive capacity in the link between FDI and performance were operative. The results of these models are illustrated in Table VI.

TABLE VI: THE MEDIATING ROLE OF ABSORPTIVE CAPACITY ON FDI AND PERFORMANCE

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.281 ^a	0.079	0.067	0.49882	0.079	6.282	1	73	0.014
2	0.293 ^b	0.086	0.060	0.50047	0.007	0.521	1	72	0.473

a. Predictors: (Constant), Foreign Direct Investment

b. Predictors: (Constant), Foreign Direct Investment, Absorption Capacity

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	1.563	1	1.563	6.282	0.014 ^b
	Residual	18.164	73	0.249		
	Total	19.727	74			
2	Regression	1.694	2	0.847	3.381	0.039 ^c
	Residual	18.034	72	0.250		
	Total	19.727	74			

a. Dependent Variable: Manufacturing Performance

b. Predictors: (Constant), Foreign Direct Investment

c. Predictors: (Constant), Foreign Direct Investment, Absorption Capacity

Source: Field Data (2019).

A breakdown of the regression coefficients for the two models is reported in Table VI. The table vi shows that in the model capturing the link between FDI and performance, the coefficient for FDI was positive and significant ($\beta_1 = 0.479$, p -value = 0.013). This was an indication that unit increment in FDI would improve performance by 46.7%. In connection to the second model, the coefficients associated with the contributory factors of FDI and absorptive capacity were 0.479 ($p < 0.013$) and -0.83 ($p < 0.473$), respectively. These results suggest that controlling for absorptive capacity, there would still be a positive and significant link between FDI and performance, where a unit increment would elevate performance by 47.9%. This is presented in table vii below:

TABLE VII: REGRESSION COEFFICIENTS OF FDI AND ABSORPTIVE CAPACITY

Coefficients						
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.618	0.462	3.500	0.001	
	Foreign Direct Investment	0.467	0.186			0.281
2	(Constant)	1.905	0.611	3.117	0.003	
	Foreign Direct Investment	0.479	0.188			0.289
	Absorption Capacity	-0.083	0.115	-0.082	-0.722	0.473

a. Dependent Variable: Manufacturing Performance

Source: Field Data (2019).

C. Discussion of Results

1) FDI, Absorptive Capacity and Performance of Manufacturing Firms

A central proposition advanced in this study was that there are intervening forces that could potentially reinforce or inhibit the link between FDI and performance of companies. One of these forces was identified to be absorptive capacity. Against this backdrop, the second objective set out to explore whether or not there was any attestation that the intervening forces of absorptive capacity were operative in the relationship.

The findings for firm performance produced $R^2 = 0.086$, $F = 6.282$, $\beta = 0.479$, $t = 3.5$, $p > .05$. This implies that absorptive capacity had significant and positive relationship with firm performance. Thus, organizations that want to improve their

performance by appropriating the benefits of FDI can invest on their absorptive capacity factors by allocating resources to support acquisition, assimilation, exploitation and ensure transformation of ideas.

The findings of this study support Asuantri and Yasmin [9] that established that absorptive capacity interaction with FDI inflows have significant effect on technological innovation and subsequent performance of the firm. The outcome of the current research is also consistent with the study of Leman and Ismet [10] which found that FDI inflows improves the level of innovation with upsurge in absorptive capacity in host economies. The current findings is also consistent with Ricardo, Luisa and Simona [11] which noted that FDI influenced the outcomes of domestic firms positively and that that the capacity of domestic firms to absorb fresh knowledge was important condition for them to benefit from FDI. The findings also agree with Pedro, Jorge and Jose [36] whose study on the implications of foreign capital on Spanish manufacturing firms and established that FDI had positive spillovers on domestic organizations and they attributed this to the absorptive capacity and foreign capital were large enough, they promoted technical progress.

This study adds to the expanding body of literature linking absorptive capability of companies and their performance. The dynamic capability theory emphasized the organization's ability to organize resources, change them as situations require, and adapt to new environments. The findings of this study further support Blalock and Gertler [18] who verified that companies that possess a highly qualified set of employees benefit significantly more in their interaction with foreign companies. The study also agrees with Hamida and Piscitello [37]; Anwar and Nguyen [15] study of the Swiss and Vietnam manufacturing respectively who noted that companies that demonstrate high-level absorptive capability are more set to benefit from the spill overs emanating from FDI activities.

VI. CONCLUSION

The study purposed to establish the mediating influence of absorptive capacity on the association between FDI and performance. Absorptive capacity was operationalized as constituting acquisition, assimilation, transformation and

exploitation. The outcome provided satisfactory evidence to infer that there is a link between FDI and performance, FDI and absorptive capacity, absorptive capacity and performance and controlling for the former, produced significant impacts on performance. On the grounds of these findings, it can be concluded that the intervening forces of absorptive capacity were present in the link between FDI and performance.

The study affirmed that Absorptive capacity intervenes the association between FDI and performance. The results imply that absorptive capacity is necessary if a firm is to fully tap the benefits of FDI and thus managers should invest in the absorptive capacity of their firms. Firms need strong dynamic capabilities to appropriate existing foreign firm's resources into usable applications among the local firms. The management of local firms should improve their firm's abilities by promoting learning culture which in turn will support technology and knowledge transfer.

This study contributes to the growing body of literature on the role of absorptive capacity in the relationship between FDI and firm performance. Kenyan and Sub-Sahara Africa countries policy makers are informed by the findings of this study that absorptive capacity is an important ingredient in enabling the spillovers from foreign to local firms. Therefore, there is a need to continue improving the firm's absorptive capacity to facilitate this spillover.

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