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Influence of Organizational Culture on Construction Firms' Performance: The Mediating Roles of Innovation and Marketing Capabilities

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Abstract: Local Ghanaian construction firms have been accused of underperformance due to inadequate resources and capabilities, lack of market information, poor managerial skills, and other external factors. While construction firms may be unable to control external challenges, how they mobilize internal resources to confront them may be crucial for their performance and survival. An emerging consensus is that how organizations use their resources to respond to externalities is related to their organizational culture (OC). We contend that the unique contribution of organizational culture to firm performance (FP) may diminish in the absence of appropriate firm capabilities. Drawing on the resource-based view and capability theories, we attempt to investigate (a) how the types of OC influence FP and (b) whether innovation and marketing capabilities mediate the link between types of OC and construction firm performance. Results of partial least squares structural equation modelling show that clan, adhocracy, and market culture have significant positive association with FP, while hierarchy culture is negatively related to FP. Furthermore, innovation and marketing capabilities demonstrate a combination of full and partial mediation effects on the link between OC types and FP. Thus, the results direct senior managers' attention towards the significance of soft assets in construction firm performance outcomes, signaling a shift from a purely technical and rationalistic approach to a more adaptable and humanistic approach. It implies that while emphasizing cultural values, managers should also give priority to these two capability dimensions.

Keywords: organizational culture; innovation capability; marketing capability; construction firm performance; Ghanaian construction industry; partial least squares structural equation modelling

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1. Introduction

Within the last five years (2016–2021), the Ghanaian construction industry (GCI) has contributed significantly to gross domestic product (GDP) and employment generation. Specifically, between 2016 and 2017, the GCI accounted for 13.7% of Ghana's GDP and employed 3% of the active workforce [1]. Additionally, recent reports by Fitch Solutions reveal an attractive construction industry that contributed more than 15% to the GDP and employed more than 420,000 people in the first quarter of 2021 [2,3].

However, like other developing countries, local construction firms have been accused of underperformance [4–7]. This underperformance has worsened recently due to COVID-19 and the Russia–Ukraine war and their attendant disruptions in supply chains and currency depreciation for developing countries, including Ghana. While construction firms may be unable to control these externalities, internal factors that fall under management's control, and which reflect how construction firms react to these external challenges, maybe more crucial to organizational performance and survival [8,9]. There is an emerging consensus that how an organization mobilizes its resources to respond to external challenges is related to its organizational culture (OC) [10–12]—a socially intricate

system of organizational values and norms that play a crucial role in affecting firm performance (FP) and competitiveness.

OC controls employees' choices: choices shape behavior, and behavior leads to performance [10]. Thus, for OC to significantly improve construction firm performance, it may need to affect employee operational and behavioral routines and enhance the development of specific capabilities that impact firm performance. In an attempt to study the impact of OC on firm performance (FP), researchers have proposed a search for an influence mechanism through which OC affects performance, because linking OC directly to firms' performance may lead to ambiguous results [13,14].

In search for greater clarity of the OC–FP linkage, organizational culture scholars have explored mediating roles of motivation [15], competitive strategy [14,16], innovation [17,18], total quality management [19], and organizational citizenship behavior and knowledge sharing [20]. However, notwithstanding these previous attempts, much remains to be known regarding how organizational cultural typologies translate to firm performance outcomes.

In Ghana, there is limited empirical evidence of the corporate culture profiles of construction firms and how they draw on organizational cultural resources to attain performance objectives. To the best of our knowledge, the few studies that have made such an attempt include Dadzie et al. [14] and Atuahene and Baiden [7]. Dadzie et al. [14] found evidence of the direct effects of clan and market culture and the indirect effects of adhocracy and hierarchy culture on performance. However, it is unclear whether construction firms participated in the survey, since the target respondents were firms grouped into goods, services, and a hybrid of goods and service firms. Atuahene and Baiden [7] also investigated cultural profiles within the GCI but did not focus on how organizational culture impacts performance.

Additionally, insufficient resources and capabilities, lack of market information, and poor managerial skills [21] have been cited as partly responsible for low business performance in Ghana. However, Ahmadi et al. [22] argue that organizational or firms capabilities (FC) can lead to superior performance only when a robust set of core corporate values, beliefs, rules, and norms back those capabilities, a view that resonates with many organizational culture scholars [9,12]. Thus, as the unique contribution of OC to firm performance may diminish in the absence of specific capabilities, inappropriate cultural norms may also inhibit the deployment of firms' capabilities.

In effect, whilst capabilities are decisions and actions in resource deployment [23], organizational culture, through its values, vision, rituals, behavioral routines, management systems, and decision-making, help to mobilize, allocate, and use resources to achieve company goals [24,25]. Therefore, organizational culture will likely strengthen a firm's capabilities (FC) for better performance.

Given the gaps identified above, we draw upon the resource-based view (RBV) theory to posit that the ability of construction firms to leverage OC increases the likelihood of discovering solutions to external challenges by facilitating the deployment of distinctive capabilities within the context of the GCI. Therefore, we argue that OC relates more closely to innovation and marketing capabilities than to firm performance, and these two capability dimensions likely mediate the link between organizational culture and construction firm performance. While OC can impact various firm capabilities, the focus on these two capability dimensions is because the literature considers innovation and marketing as the two most important business responsibilities of any firm [26].

This study investigates the relationships between OC types and FP, with innovation and marketing capabilities as conduits for understanding how OC influences the performance of construction firms. Using data from construction firms in Ghana, we attempt to address (a) how the different types of OC impact FP and (b) whether innovation and marketing capabilities mediate the relationship between OC types and FP.

Our study extends the notion of organizational culture as a competitive resource and relates it to construction firm performance by showing the comparative direct and indirect

impact of OC types on firm performance. Specifically, we contribute to the literature on OC—firm capabilities, firm capabilities—FP, and studies investigating mediators between OC and FP. The study results also support the widely held belief, first articulated by Drucker [26], that innovation and marketing are the two most important responsibilities of any business entity. Researchers recognize the context-specificity of the impact of OC on FP. This research satisfies the demand for studies of OC and FP to be placed within the framework of engineering and construction organizations in a developing country. Local construction firms will find this study helpful in developing appropriate cultural typologies or changing inappropriate cultures for enhanced performance. Moreover, international construction firms and joint venture (IJV) partners will find the results relevant for overcoming performance challenges due to cultural divergence [27] and cultural distance within the GCI, respectively [28].

The remainder of this paper is structured as follows: in Section 2, we discuss related literature on organizational culture, firm capabilities, and construction firm performance. From this review, we advance a conceptual framework of the OC–FC–FP relationship and outline various hypotheses among variables represented in the framework. In Section 3, we discuss the methodology used in the study. The analysis and discussion of results are presented in Section 4. Section 5 presents the results, the theoretical and managerial implications. Finally, Section 6 concludes with the research limitations and future research directions.

2. Literature Review and Hypotheses

2.1. The Organizational Culture (OC) Concept

Organizational culture studies have seen significant emphasis since the 1980s [10,22,29,30]. This impetus arose from realizing the importance of OC in the "environment–strategy–structure–performance" and better predicting organizational performance [12]. However, despite its importance and applicability at different levels—national, industry, and co-operative—there is still no agreement on defining the cultural construct [31].

Sath [31] defines culture as significant mutual understandings regarding a group's beliefs and values, whereas Smircich and Stubbart [32] consider culture as the "social glue" that binds a group of people together. Others, such as Schein [33] (p. 6), define culture as the "deeper level of basic assumptions and beliefs shared by members of an organization that operate unconsciously and that represent in a 'basic taken for granted fashion' an organization's view of itself and its environment". Indeed, just as individuals are distinguished by their personalities, a company's culture perfectly represents its unique personality [34].

Barney [8] noted that culture studies, regardless of their theoretical focus, employ identical terminologies and concepts. Thus, there seem to be consensus on the constituents of culture [27]. For instance, Schein [33] asserts that most of the definitions of culture in the literature contain tenets such as basic assumptions, values, beliefs, opinions, and norms, which are both implicit and explicit to the organization [35]. Moreover, not only must these tenets be shared by members, but they must also be transmittable to new members of the entity [33].

Organizational culture's functions include internal integration and coordination through maintaining organizational stability and promoting a sense of belongingness and altruism that guide and shape employees' conduct [34,36]. In addition, efficiency is often seen as built on a firm foundation of a culture that is both cohesive and responsive to the wellbeing of employees and the difficulties of market dynamics [37].

The literature is replete with several conceptualizations or models of organizational culture. Among them is the organizational culture inventory (OCI) proposed by Cooke and Szumel [38]. The OCI is based on two underlining dimensions: (1) concern for people versus concern for tasks and (2) behavioral expectations for personal styles directed

toward the fulfilment of higher-order growth needs versus those directed toward protecting and maintaining one's security [38]. However, according to Zhang and Liu [10], the 120 questions used to measure culture based on OCI are empirically lengthy and it is sometimes complicated for respondents to distinguish among the questions clearly. In addition, Caldwell et al. [39] proposed the organizational culture profile (OCP) for measuring culture based on seven dimensions of innovation, stability, respect for people, outcome orientation, team orientation, attention to detail, and aggressiveness.

Organizational culture can also be evaluated using the organizational culture assessment instrument (OCAI) proposed by Cameron and Quinn [40]. OCAI is based on the competing values framework (CVF) proposed by Quinn and Rohrbaugh [41]. According to Ahmadi et al. [22], the CVF measures culture based on two primary dimensions: (i) whether the organization is internally focused or externally oriented and (ii) whether the organization emphasizes stability and control or flexibility and discretion. These two dimensions provide four opposing and competing quadrants, each reflecting a distinct set of essential criteria when assessing an organization [40,42]. The top right quadrant, known as adhocracy culture, emphasizes flexibility, external adaptation, and entrepreneurship. The top left quadrant (clan culture) emphasizes flexibility but is internally focused and concerned with employee involvement and teamwork [22,40,42,43]. The two lower quadrants (hierarchy and market cultures) emphasize stability and control, whilst hierarchy culture (lower left quadrant) is internally focused, rule-oriented and exudes values of efficiency and control. Finally, the lower right quadrant (market culture) is externally focused, with core values such as achievement, competitiveness, and consistency [14,17,40,42].

These cultures are diagnosed based on six critical measurements of dominant characteristics, the leadership style, the organizational glue, the strategic emphasis, the success criteria, and the management of employees [40]. Each of these six key dimensions has four (4) alternative statements representing the four (4) cultural typologies. These four statements form the basis for diagnosing an organization's culture [44].

We adopted OCAI for this study for several reasons. First, OCAI is reputed to cohere with the thinking of most authors in the mainstream culture's literature [43] and is included among the forty (40) most influential frameworks in the history of business [45]. Secondly, it provided the framework for diagnosing and changing the organizational culture of enterprises in more than fifteen (15) countries [46] and, for more than two decades, tested and verified in leading business educational institutions and organizations by thought leaders [41]. Lastly, it has proven reliable in measuring corporate culture in construction [35,44,47–50] and has empirical support for its validity and reliability in Ghana's context and Africa in general [14].

Notably, these four cultural typologies are not mutually exclusive in any business enterprise [51], but, by implication, they all exist in firms, although one eventually evolves as the dominant culture [46]. Adhocracy and clan cultures are both humanistic and organic, exhibiting flexibility [17]. The difference is that adhocracy is externally focused and promotes risk-taking, creativity, and entrepreneurship, whilst clan is internally focused, with employee and customer involvement and teamwork as its fundamental values [14,40,43].

Hierarchy and market cultures are rule-based, with fundamental differences in their response to change [14]. Whilst the core values of market culture include goal attainment and market dominance that could lead to a change in rules, hierarchy culture resists change by emphasizing consistency and conformity to existing regulations and norms [10,44,52].

2.2. The Concept of Firm Performance

Although there has not been much consensus on the criteria and metrics for measuring business performance [52], it is one of the most important constructs in organizational studies. Firm performance is multifaceted and dynamic [53], so selecting measures for this construct for any research must be performed carefully to avoid wrong interpretations. According to Venkatraman and Ramanujam [54], financial performance measures have dominated the management literature mainly because financial systems dictate firms' strategic goals. However, considering only financial measures is incomplete, and performance is much more complex than economic indicators [42]. Construction management researchers have also criticized the reliance on financial measures as too simplistic and short-sighted [53,55,56] and too narrowly and reactively focused on efficiency, profitability, and return on capital [57,58].

Consequently, Love and Holt [59] advocated for the inclusion of broader stakeholder concerns in evaluating firm performance. The advocacy by Love and Holt to include more general stakeholder concerns has had backing from DeNisi and Smith [60], who proposed the triple bottom-line of sustainability, employees, and customer satisfaction. Therefore, in this research, performance is conceptualized broadly to include financial measures, operational measures, and stakeholder expectations.

2.3. Organizational Culture and Firm Performance

Additionally, the literature reveals a significant association between OC and performance. OC is considered a powerful means to attaining firm outcomes [35,51]. Organizational culture affects firms' long- and short-term performance [37]. It also carries employees along in formulating and executing firms' goals [61]. Culture is crucial for attaining business objectives in supply chains [62], mergers, acquisitions, and joint ventures [63]. Organizational culture affects innovation in industrial companies [17] and influences efficiency and quality in construction firms [10,27,35,51]. Thus, like other drivers of firm performance, OC has the potential to be a critical point of differentiation and aid in the establishment of long-term competitive advantage. In the long run, the OC represents the genuine identity of the organization [11,64].

However, each dimension and typology of organizational culture has varying effects on firm performance [29,65]. For instance, Gordon and DiTomaso [66] found that, for US firms, adaptability (market and adhocracy) cultures performed better financially than those cultures that prioritize stability (clan and hierarchy). Moreover, Hartnell et al. [30] revealed that clan, adhocracy and market cultures were positively related to performance outcomes such as employee attitudes, financial performance, and product or service quality and innovation. Specifically, compared to market and adhocracy cultures, clan cultures significantly impacted employee satisfaction and loyalty to the firm. On the other hand, market culture had a strong and significant positive impact on financial performance compared to adhocracy and clan cultures. Finally, operational effectiveness—service and product quality and innovation—had moderate to a strong association with the three culture types of clan, adhocracy, and market cultures.

In the study of Deshpandé et al. [46], adaptive (market) and flexible (adhocracy) cultures perform better than more consensual (clan) and bureaucratic (hierarchy) cultures in Japan.

In the Ghanaian context, clan and market cultures were related directly to firm performance, whilst differentiation or cost leadership mediated the relationship between performance and hierarchy and adhocracy cultures [14]. From the preceding discussion and taking cognizance of the findings of the study of Dadzie et al. [14] and the fact that West African countries are more collectivistic cultural nations [67], we expect that organic cultures (clan and adhocracy) will engender performance more than mechanistic (hierarchy and market) cultures. However, market culture is also expected to relate positively to firm

performance due to the quest to adapt to the present industry conditions. Thus, the following hypotheses are proposed.

Hypothesis 1 (H1). *The performance of construction organizations is positively associated with (a) clan culture, (b) adhocracy culture, and (c) market culture but negatively related to (d) hierarchy culture.*

2.4. Firm Capabilities (FC)

While having an appropriate culture is essential, it may not be adequate to attract and retain clients, because customer loyalty is usually associated with firms that can meet or exceed customer expectations. As such, the unique contribution of OC can diminish in the absence of specific capabilities. Therefore, the focus of RBV research has shifted from resource possession to the outcomes of resource use and deployment [68–70]. It is now thought that how well businesses put resources to use may be far more critical in determining their level of performance than the number of resources owned [71].

Much of the literature defines capabilities as a collection of different but interconnected organizational routines and procedures [21,72,73]. According to Day [23], capabilities allow businesses to integrate their operations and utilize their assets through sophisticated bundles of skills, accumulated knowledge and organizational procedures. Teece et al. [74] consider capabilities as the combination of distinctive abilities, complementary assets, and established routines that constitute the bedrock of a firm's competitive advantage. Firms' capabilities are closely integrated with organizational processes and manifested through four cardinal dimensions: accumulated employee knowledge and skills, technical systems, managerial processes, values, and norms [23,75].

The literature lists a variety of organizational capabilities that may exist within an organization [76,77]. These capabilities are demarcated according to functional domains such as managerial, marketing, innovation, technological, research, and development [78].

Given the country's economic downturn, the scramble for limited construction job opportunities, and the scarce resources available to firms, construction organizations may need to emphasize some specific capabilities more than others. Recognizing Acquaah and Agyapong's [21] assertion that internal factors that threaten the survival of Ghanaian firms include insufficient resources and capabilities, lack of market information, and poor managerial skills, Ghanaian firms should prioritize capabilities that inure to their survival and competitiveness. Indeed, under these challenging conditions, innovation is necessary for an organization's survival, competitiveness, and ultimate performance [79,80]. In addition to being extremely important for firms, innovation is also related to overall regional and national economic success [81].

However, other scholars suggest that due to the necessity of fostering innovative outputs of organizations, pursuing innovation in isolation may be insufficient to ensure sustained performance [73,82] and can even lead to "capability-rigidity". Capability-rigidity is when a current product innovation capability precludes new ones [83,84]. The implication is that for a firm to successfully exploit its innovative capabilities (IC) for new markets, meet customer demands, and obtain value for new products, it must have marketing capabilities (MC) [23,73,84]. Indeed, the potency of the innovation–marketing mix capabilities for superior performance is summed up by Drucker [26] saying that the *raison-d'être* of any business is to create a customer, and in doing so, firms have only two fundamental functions: innovation and marketing. Consequently, this research proposes that innovation and marketing capabilities are conduits through which organizational culture influences firm performance.

2.4.1. Innovation Capability (IC) and Firm Performance

Due to the dynamic nature of most industries, it is almost impossible to find a firm that does not constantly or occasionally innovate to adapt [85]. Therefore, innovation

capability contributes to competitive advantage and performance through new products, service development, and improved production and management processes [86]. Furthermore, in construction, product/service and process innovation should satisfy current and future customer demands [84,87]. Therefore, innovation capability refers to the capacity of businesses to successfully embrace or apply new ideas, processes, and products.

Several studies have linked innovation capability to firm performance. Jeng et al. [84] found a positive association between innovation capability and firms' performance, especially for medium and large enterprises among publicly listed companies in the US. Aghimien [79] found that innovation engenders construction firms' survival in a challenging economy in Nigeria, whilst Ulubeyli et al. [80] also found a positive indirect association between innovation and the performance of construction enterprises in Turkey. Innovation is critical for a successful construction business in Indonesia [88] and during recessionary periods in Spain [89]. These studies cited above, and many others have demonstrated the positive association between innovation and firm performance. Therefore, we hypothesize:

Hypothesis 6 (H6). *IC is positively associated with construction FP.*

2.4.2. Marketing Capability (MC) and Firm Performance

The critical role marketing capability plays in firm performance has been of considerable interest to scholars in strategic management and marketing [21,23,73,84,90–93]. Concerning competitors, marketing capability is the firm's ability to anticipate customer preferences and effectively produce its offerings to meet these needs [90]. It involves deploying tangible and intangible resources to deliver new products and enter new markets, meet customer demands through after-sales service, and obtain value through superior pricing skills for new products than rivals [23,93]. Marketing capabilities also allow firms to acquire clients' loyalty and enhance their reputation. In construction, marketing capabilities have been found to improve firm performance [89]. Considering the above discussion, we hypothesize:

Hypothesis 7 (H7). *MC is positively associated with construction FP.*

2.5. Mediation

2.5.1. The Mediating Role of Firms' Capabilities

Leonard-Barton (1992) observed that the knowledge component of Firm capabilities is distributed along four dimensions. These are (1) employee accumulated knowledge and skills, (2) technical systems, (3) management systems, and (4) values and norms.

The values and norms refer to organizational culture. For all dimensions of capabilities, the values and norms underscore the method and nature of the information gathered, who has access to what information and how the information will be used [23,73]. According to Leonard-Barton [75], appreciating this critical component, which has largely been ignored, is crucial to managing new products, routines, and core capabilities.

Consequently, aligning core capabilities with appropriate organizational norms and values is necessary for successful performance outcomes. Therefore, depending on which values and norms particular culture espouse, innovation or marketing capabilities may be strengthened to lead to superior performance or weakened to affect performance negatively.

2.5.2. Organizational Culture and Innovation Capabilities

Among the diverse ways that innovation has been defined, "new ideas" has emerged as a central tenet [94]. These "new ideas" are a product of creativity impacted by external and internal organizational variables [94]. External drivers include market dynamism, degree of competition, and geographical location [23,73,90,95]. Internally, creativity

flourishes based on certain opportunity-enhancing practices such as flexible authority with fewer levels of hierarchy, employee freedom and autonomy, and involvement and information sharing [60]. Even though researchers use creativity and innovation interchangeably, they are conceptually different [95]. Whilst creativity is the generation of new ideas, a trait that applies at the level of the individual employee, innovation occurs when ideas generated through creativity are implemented successfully [96]. Amabile et al. [97] agree with the distinction between the two (creativity and innovation) by defining creativity as the generation of unique and valuable ideas whiles effectively converting those ideas to rents for the organization constitute innovation. The implication is that creativity precedes innovation. Successful implementation of creative ideas depends on the organization's innovative capabilities.

As Schein [33] noted, most definitions of culture contain tenets such as shared basic assumptions, values, beliefs, opinions, and norms, which are both implicit and explicit to the organization. These shared constituents of organizational culture form the basis of employee interaction and communication [97] and thus affect employees' behavior through integration and coordination [34]. The implication is that employees learn to see innovation as a core demand in the organization and will strive to commit to it when the shared values are innovation-oriented. [96].

Therefore, organizational culture may enhance or stifle creativity and innovation [17,34,95,98]. Thus, a culture that enhances innovation should engender employee creativity and inspire them to explore various ways of implementing new ideas even when successful outcomes may not be apparent [34,99].

The question is, which values and norms of OC foster or stifle creativity and innovation? Given the unavoidable link between risk and creativity/innovation [100], organizational cultural values that can enhance creativity and innovation must be risk-tolerant by allowing for employee freedom and autonomy. It must also be flexible and tolerant of employees' mistakes, promote a sense of belonging, allow for open communication, sensitive to customer demands, and dynamic and future oriented [82,85,86,95,99,100]. Furthermore, all of the aforementioned cultural characteristics promote the intrinsic motivation of employees, a crucial element for creativity and innovation [96,97].

Considering organizational typologies based on the CVF, flexibility-oriented cultures, such as adhocracy and clan culture, will most likely spur innovation and creativity compared to controlled and rule-based cultures such as hierarchy and market cultures. This is because flexibility-oriented cultures are associated with risk-taking, freedom, and creativity, whilst rule-based cultures emphasize stability and control, which may inhibit creativity and innovation [14,99,100].

Additionally, externally oriented cultures may promote innovation more than internally focused cultures [17] due to the need to respond to customer requirements and build relationships with external stakeholders [100]. Wolpert [101] affirms that an enterprise cannot identify and utilize opportunities outside of its current portfolio or above its existing technological or operational capability levels if it remains cooped up inside its own four walls.

Empirically, the study of Naranjo-Valencia et al. [17] shows a significant positive and significant negative association between innovation and adhocracy culture and innovation and hierarchy culture, respectively. However, there was an insignificant link between innovation and clan and market cultures. Jaskyte and Dressler [99] also found a significant positive relationship between innovation and adhocratic cultural values of risk-taking, external adaptation and experimentation in non-profit organizations. On the other hand, innovation was related negatively to cultural values such as predictability, stability, and security. Jaskyte and Kisieliene [102] also found stability-oriented cultures to relate negatively to innovation.

The literature is inconclusive regarding the relationship between innovation capability and market and clan cultures [103]. For clan culture, emphasizing teamwork, communication and flexibility are expected to enhance innovation. However, clan culture's

internal orientation may also inhibit innovation since access to new ideas and opportunities may be restricted. Therefore, whether clan culture fosters innovation or inhibits it may depend on the context.

Regarding market culture, there are values for and against innovation. It is externally oriented and so may have access to new and creative ideas on how to be market leaders. However, it is also rule-based and characterized by regulations and formal structures [46,86]. These formal structures and bureaucratic values impede creativity and innovation [99,100,102]. Given these contradictions, we propose that the relationship between market culture and innovation capability may be contingent on contextual factors. Therefore, for the GCI, it is hypothesized that:

Hypothesis 2a (H2a). *Clan culture is positively associated with IC.*

Hypothesis 3a (H3a). *Adhocracy culture is positively related to IC.*

Hypothesis 4a (H4a). *Hierarchy culture is negatively related to IC.*

Hypothesis 5a (H5a). *Market culture is positively associated with IC.*

2.5.3. Organizational Culture and Marketing Capabilities

Marketing capability represents a firm's ability to forecast and appreciate customer needs better than its competitors [90]. It involves deploying tangible and intangible resources to deliver new products and enter new markets, meet customer demands through after-sales service, and obtain value through superior pricing skills for new products than rivals [23,93]. Marketing capabilities also allow firms to achieve customer-related advantages concerning customer attraction and retention, customer satisfaction, and relationship building [73].

The literature is silent on which CVF cultural typology likely spurs marketing capability. However, given that marketing capability is contingent on how firms relate to their external environment, it is likely that externally oriented cultures foster marketing capability. Similarly, since marketing forms the backbone for obtaining a competitive advantage through innovation, it is hypothesized that cultural values enhancing innovation may also boost marketing capabilities. Thus, we propose the following hypotheses:

Hypothesis 2b (H2b). *Clan culture is positively associated with MC.*

Hypothesis 3b (H3b). *Adhocracy culture is positively related to MC.*

Hypothesis 4b (H4b). *Hierarchy culture is negatively related to MC.*

Hypothesis 5b (H5b). *Market culture is positively associated with MC.*

Having established the links between the different types of OC and the two dimensions of firm capabilities, and the capability–performance relationships, we propose the following mediation relationships:

Hypothesis 8a (H8a). *IC mediates the relationship between clan culture and FP.*

Hypothesis 8b (H8b). *MC mediates the relationship between clan culture and FP.*

Hypothesis 9a (H9a). *IC mediates the relationship between adhocracy culture and FP.*

Hypothesis 9b (H9b). *MC mediates the relationship between adhocracy culture and FP.*

Hypothesis 10a (H10a). *IC does not mediate the relationship between hierarchy culture and FP.*

Hypothesis 10b (H10b). *MC does not mediate the relationship between hierarchy culture and FP.*

Hypothesis 11a (H11a). *IC mediates the relationship between Market culture and FP.*

Hypothesis 11b (H11b). *MC mediates the relationship between Market culture and FP.*

3. Methodology

Using the research model (Figure 1), we employ partial least squares structural equation modelling (PLS-SEM) to reveal the hypothesized causal links among OC, FC, and performance of construction firms (FP). PLS-SEM is a second-generation technique developed for analyzing causal relations between theoretical concepts or models involving multiple constructs such as in the current investigation. Among the many reasons for adopting PLS-SEM for our research include its (1) veracity in handling formative constructs compared to covariance-based SEM [104], (2) suitability for exploration and theory development especially for complex models [105], and (3) ability to handle both normal and non-normal data [106].

We developed the model by drawing from the resource-based view and capability frameworks and building on the conceptualization of construction firms as business entities with organizational culture and firm capabilities as firm resources and capabilities. By exploring these relationships, this model explains how OC and FC interact in a construction organization to achieve superior firm performance.

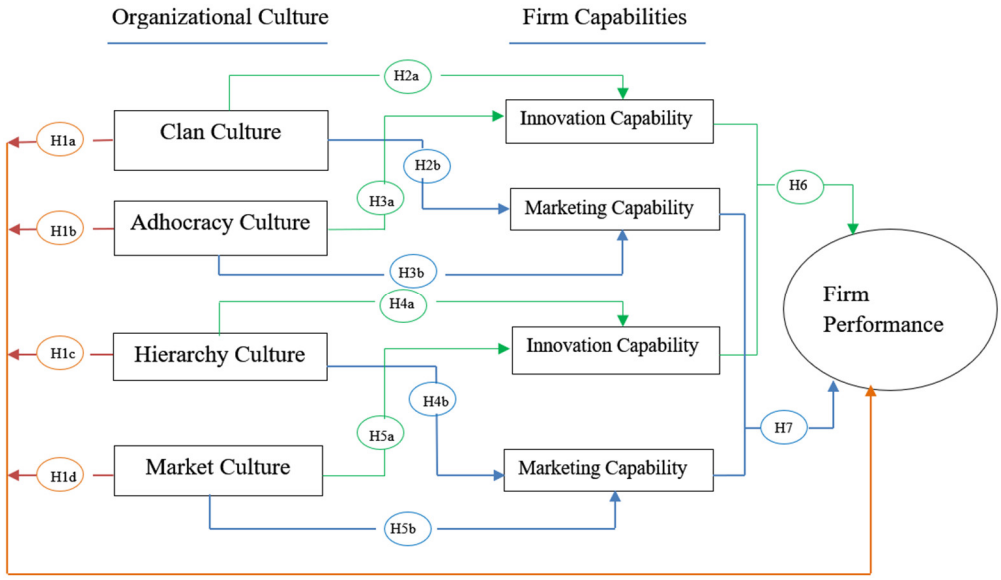

Figure 1. Research model and hypotheses.

3.1. Data and Sample

The sample population for the study comprised civil engineering and building construction enterprises registered with Ghana's Ministry of Works and Housing (MWH). The ministry registers construction companies as D1K1, D2K2, D3K3, and D4K4 based on their financial, technical, plant and equipment, and managerial resources, with D1K1 being the top contractors through to D4K4 being the lowest ranked contractors. D1K1 contractors are qualified to undertake any building and civil engineering project, whilst D2K2, D3K3, and D4K4 are restricted based on the project's estimated value.

We designed and administered the questionnaire among five (5) senior managers of construction contracting firms as a pilot study. Their input led to modifications of some of the wording of the questionnaires. The sampling was purposive, targeting senior

managers in three cities—Accra, Kumasi, and Tamale—who could provide information relevant to the study's objectives. The approach was snowballing, where managers who participated in the questionnaire referred the researchers to other managers within the construction industry in July 2022. One hundred sixty (160) responses were received at the end of July 2022. A second round of data gathering was undertaken, and 95 responses were received in the middle of August 2022, making a total of 255 responses. Out of the 255 responses, six (6) were incomplete and therefore excluded from further analysis. We used the remaining 249 valid responses for subsequent analysis.

Most of the respondents were from firms classified as D1K1 (18.1%), D2K2 (48.6%), D3K3 (21.3%), and D4K4 (12%). The number of employees ranged from up to 20 (20.9%), 21–40 (36.9%), 41–60 (27.7%), and more than 60 (14.5%). Of the respondents, 36.6% had university degrees, whilst 63.4% had post-graduate degrees. As professionals, 53.8% had worked in the industry for at least ten (10) years, whilst 46.2% had a maximum tenure of 10 yrs. Again, respondents were mostly construction managers (34.5%) and quantity surveyors (29.7%), 10.8% are architects, and 24.9% are civil engineers.

3.2. Measures

Our research used the 24 items constituting the organizational culture assessment instrument (OCAI) to measure organizational culture. The OCAI has been validated by several studies in the general and construction management literature [10,14,19,30,35,44,46,48–51]. Diagnosing organizational culture involves respondents dividing 100 points among the four alternative statements representing the four cultural typologies, depending on how closely each alternative resembled their organization. This is known as the ipsative scale [40]. However, because the ipsative scale does not provide independent responses [35], most researchers in construction adopt the Likert scale for diagnosing organizational culture. See, for instance, the impact of organizational culture on the quality management system for construction companies in Indonesia by Willar et al. [49], Zhang and Liu [107] for organizational culture clusters of construction organizations in China and Oney-Yazici et al. [48] for Turkish construction firms. Thus, this research also adopts the Likert scale to diagnose the culture profiles of construction firms in the GCI.

We modified the five (5) items from the validated scales of Leonard-Barton [75], and Lado et al. [24] to measure innovation capability (See Table A1). Marketing capability was measured with five (5) indicators adapted from the validated scale proposed by Vorhies and Harker [108] [90,91] and Lado et al. [24] (See Table A1). In addition, we used six perceptual scales drawn from the extant construction management literature to measure firm performance [56,109–112]. These measures consist of financial and non-financial measures within the last three years. The four (4) culture constructs were anchored on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) and the remaining four (4) constructs used a five-point Likert scale of "not important (1)" to "very important (5)". Previous studies have acknowledged the impact of firm size on company performance, so the financial class (D1K1, D2K2, D3K3, and D4K4) was used as controls on the dependent variable. In addition, firm capability improvement may be impacted positively or negatively by the dynamics of the industry and eventually affect firm performance. Therefore, we captured industry conditions as a second control variable.

4. Results

4.1. Measurement Model Validation

4.1.1. Validating Reflective Constructs

The measurement model was validated by checks for reliability and validity for the four (4) constructs—innovation capability, marketing capability, firm performance, and industry conditions. A confirmatory factor analysis (CFA) reveals that each construct has significant and substantial item loadings. According to Figure 2, all standardized factor

loadings surpass 0.50 and are statistically significant [105–107]. The average variance extracted (AVE) for each construct was greater than 0.5 (Table 1) [108], indicating convergent validity. We checked for reliability using composite reliability (CR) and Cronbach's alpha. The results indicate they are both more than 0.70 for each construct. In addition, the correlation coefficients are less than the square roots of their respective AVEs (in bold in Table 1) [108]. Moreover, all heterotrait–monotrait ratios of correlations (HTMT) for the four (4) constructs are below 0.85 (ranging from 0.076 to 0.756) [109,110], as shown in Table 2.

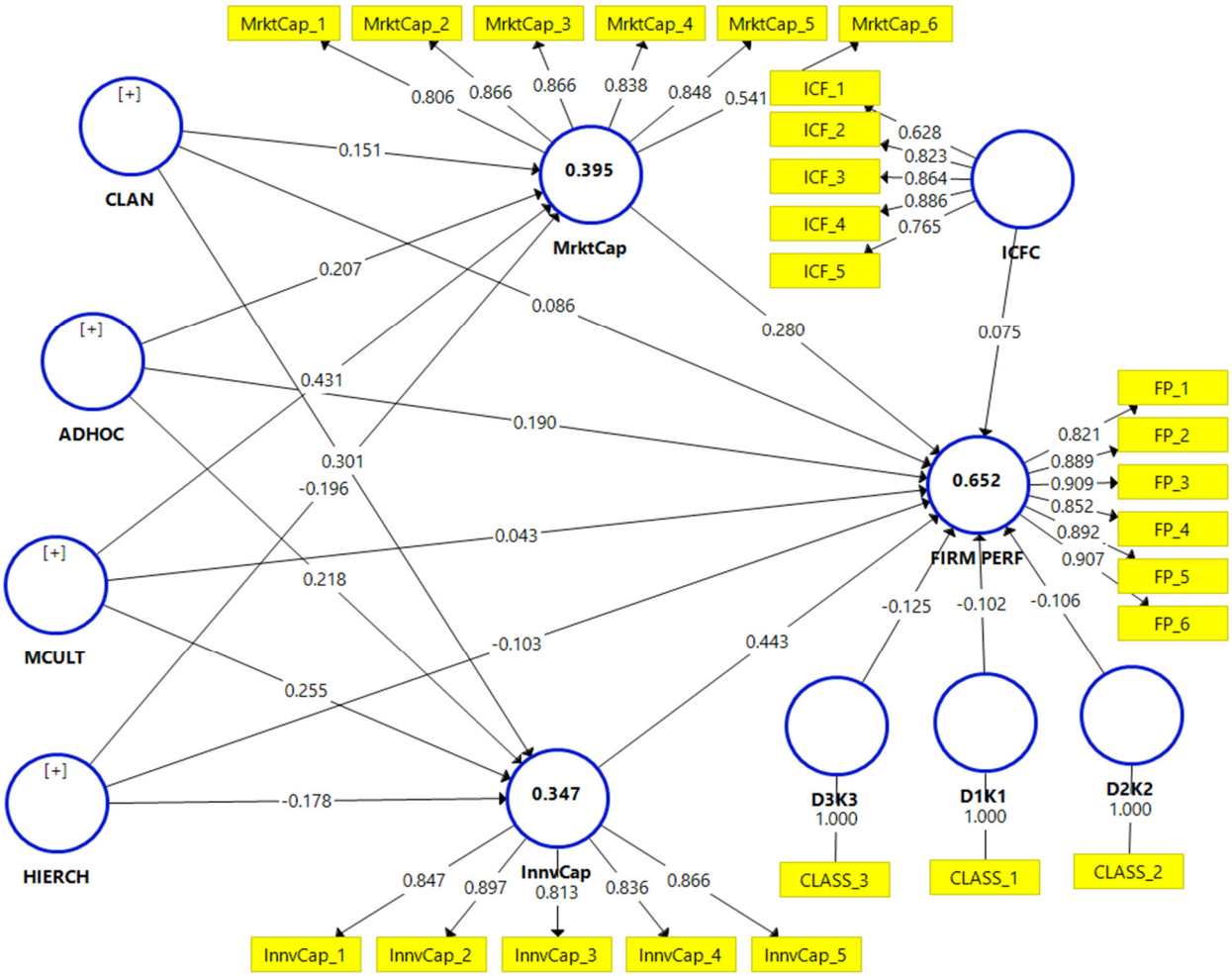

Figure 2. Results from confirmatory factor analysis showing indicator loadings.

These two results indicate that the four (4) constructs are entirely different. Finally, we conducted post-hoc Harman's single factor test to assess common method bias (CMB). Using SPSS version 26, we entered all the constructs into a principal component analysis with an unrotated factor solution to identify if any single latent variable accounts for more than 50% of the variance explained. The results extracted ten (10) dimensions from 39 items, accounting for 72.695% of the total variance. The first factor accounted for 29.47% of the variance in the data, well below the threshold of 50%. Therefore, it was concluded that CMB was not a problem in the data. Next, we checked for multicollinearity using variance inflation factors (VIF) [113]. The VIF values for all indicators ranged from 1.23 to 3.98, well below the cutoff value of 5.0.

Table 1. Measurement model validation.

Constructs	CA	CR	AVE	1	2	3	5
1. Firm performance	0.941	0.953	0.773	**0.879**			
2. Industry conditions	0.885	0.897	0.638	−0.102	**0.799**		
3. Innovation capability	0.905	0.930	0.726	0.699	−0.107	**0.852**	
4. Marketing capability	0.884	0.914	0.644	0.571	−0.187	0.373	**0.802**

CA: Cronbach's alpha; CR: composite reliability; AVE: average variance extracted; **Bold and diagonal: Square roots of AVEs.**

Table 2. Heterotrait–monotrait ratio (HTMT).

Constructs	1	2	3	4
1. Firm performance				
2. Industry conditions	0.084			
3. Innovation capability	0.756	0.094		
4. Marketing capability	0.619	0.217	0.407	0.530

4.1.2. Validating Formative Constructs

According to the competing values framework, the culture of an organization is diagnosed based on six critical measurements of dominant characteristics: the leadership style, the organizational glue, the strategic emphasis, the success criteria, and the management of employees [40]. Therefore, organizational culture typologies are measured as formative constructs since these dimensions are, in our view, considered features that define the organizational culture construct. Given that conventional reliability assessment is irrelevant for formative scales [114], alternative methods proposed in the literature were used. The variance inflation factor was first used to determine whether multicollinearity, a severe threat to formative scales, existed [14,114–116]. It entails a sequence of regression models in which each construct is the outcome variable, and its elements are the independent variables [14]. Table 3 shows the VIF values ranging from 1.216 to 2.907, well below the stringent threshold of 3.3 proposed for formative constructs [114,115].

Table 3. Outer weights, outer loadings and VIF for formative constructs.

Construct	Indicators	VIF	Outer Weights	*T*-Statistic	*p*-Values	Outer Loading	*p*-Values
Clan culture	Clan_1	1.905	0.132	0.948	0.343	0.725	0.000
	Clan_2	2.972	0.227	1.002	0.316	0.858	0.000
	Clan_3	2.470	0.140	0.735	0.462	0.759	0.000
	Clan_4	1.880	0.563	3.581	0.000	0.917	0.000
	Clan_5	2.797	0.141	0.812	0.417	0.727	0.000
	Clan_6	2.782	−0.022	0.131	0.895	0.705	0.000
Adhocracy culture	Adhoc_1	1.216	−0.050	0.432	0.665	0.361	0.004
	Adhoc_2	1.429	0.355	2.939	0.003	0.730	0.000
	Adhoc_3	1.496	0.185	1.486	0.137	0.650	0.000
	Adhoc_4	1.398	0.034	0.285	0.776	0.529	0.000
	Adhoc_5	1.261	0.372	3.144	0.002	0.676	0.000
	Adhoc_6	1.325	0.478	4.402	0.000	0.772	0.000
Hierarchy culture	Hierch_1	2.045	−0.528	1.192	0.233	0.301	0.263
	Hierch_2	2.066	0.324	0.807	0.420	0.690	0.004

	Hierch_3	2.297	0.218	0.527	0.598	0.675	0.004
	Hierch_4	2.286	0.887	1.838	0.066	0.894	0.000
	Hierch_5	2.206	−0.071	0.174	0.862	0.504	0.038
	Hierch_6	1.581	0.058	0.127	0.899	0.526	0.076
Market culture	Mcult_1	2.240	0.305	2.191	0.028	0.829	0.000
	Mcult_2	2.585	0.047	0.298	0.765	0.781	0.000
	Mcult_3	2.724	−0.025	0.163	0.870	0.770	0.000
	Mcult_4	2.531	0.258	1.694	0.090	0.837	0.000
	Mcult_5	2.907	0.134	0.644	0.520	0.832	0.000
	Mcult_6	2.362	0.446	2.916	0.004	0.903	0.000

The next step was to evaluate the outer weights of the formative indicators of each organizational culture typology. According to Benitez [114], the outer weights assess the significance of each indicator's proportional weight's contribution to the latent construct. Hair et al. [104] recommend that each indicator's absolute contribution to the latent construct be examined by inspecting the outer loadings for cases where the outer weights are insignificant. Outer loadings that exceed 0.50 and are significant are valid for further analysis. Thus, we retained all indicators for clan culture and market culture for further analysis. Apart from "Adhoc_1", which has a significant outer loading of less than 0.50, all the indicators for adhocracy culture were significant, with values exceeding 0.50.

However, for content validity of the adhocracy culture construct and the fact that the outer loading is significant, Adhoc_1 was still included in the analysis. Furthermore, for hierarchy culture, "Hierch_1" had an insignificant outer loading of less than 0.50, while "Hierch_6" had an insignificant outer loading of more than 0.50. Therefore, following the recommendations of Hair et al. [117], "Hierch_6" is generally retained for the empirical analysis

However, considering the competing values framework, the content validity of the hierarchy culture construct may be jeopardized if "Hierch_1" is excluded from the study. In such situations, Benitez et al. [114] recommended repeating the analysis and dropping the questionable indicators to explore whether the decision to keep or exclude them affects the results. Thus, the analysis was repeated with and without "Hierch_1". The results of the two processes did not show any significant differences. Therefore Hierch_1 was included in the analysis.

4.2. Assessing the Structural Model and Testing the Hypotheses

Using PLS-SEM version 3, we developed three structural models to examine the direct and indirect effects among the variables. The models are OC–FP (Model I); OC–FC (Model II); and the entire structural model (Model III), OC–FC–FP. PLS-SEM is reputed to provide good statistical power for comparatively small sample sizes using a series of ordinary least square regressions [56,104]. There are several methods for calculating the smallest sample size required for PLS-SEM. Among them include the 10-times rule [118], the minimum R-Square value [104], the inverse square root method [119], and the gamma exponential method [119].

With four (4) predictors, two (2) mediators, two (2) control variables, and one independent variable, the minimum sample size required is ninety (90) when using the 10-times rule. An improvement on the 10-times rule is the minimum R-Square value [104], whose estimation of minimum sample size depends on a table of values related to the maximum number of arrows pointing at a construct, the minimum R^2 envisaged in the model and the significance level used. However, these two methods have often been criticized for inaccurate sample size estimations [119].

On the other hand, the gamma exponential method provides the most accurate results of sample size estimations for PLS-SEM [119] but is a little complex for non-

methodological researchers. Consequently, we use the inverse square root method, which according to Kock and Hadaya [119], is simple and generates reasonably accurate and conservative ("slight over-estimation") estimates. Therefore, with an assumed significance level of 0.05 and a minimum path coefficient of 0.20, the minimum sample size required, based on the inverse square method for this study, is 155. Thus, a sample of 249 is appropriate for achieving statistical power for the proposed model. At a 95% confidence level, the bootstrapping approach with 5000 samples was used to detect indirect effects [120] and assess whether or not the estimates were significant [56,104].

The results from Table 4, Model I show that while clan, adhocracy and market cultures have significant, positive relations with innovation and marketing capabilities, there is an insignificant negative relationship between hierarchy culture and both capabilities. Moreover, from Table 4, Model II, and Figure 3, there are significant direct effects on firm performance by clan culture ($\beta = 0.275$, $t = 4.240$, $p < 0.001$), adhocracy culture ($\beta = 0.349$, $t = 6.157$, $p < 0.001$), and market culture ($\beta = 0.282$, $t = 5.850$, $p < 0.001$) but not hierarchy culture ($\beta = -0.162$, $t = 0.941$, $p > 0.1$). For all significant paths, the effect sizes (f^2) are greater than 0.02 (0.140,0.119 and 0.190) for the clan, adhocracy, and market cultures, respectively [121]. According to Cohen [121], f-square measures the strength of impact and values of 0.02, 0.15, and 0.35 imply small, medium, and large impact, respectively. The results suggest that hypotheses H1a, H1b, and H1c are supported but not H1d.

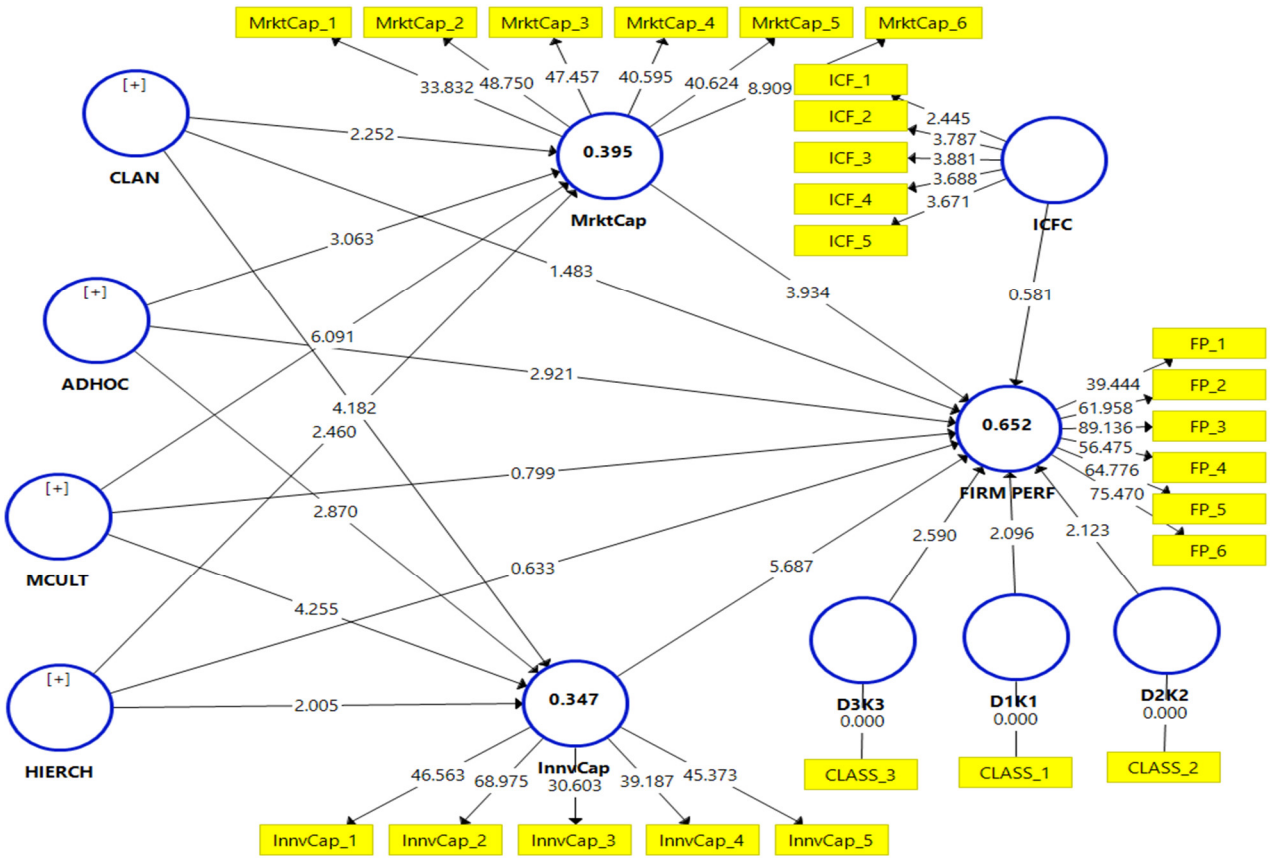

Figure 3. Full Structural model of OC types, FC dimensions and firm performance.

Table 4. Standardized path estimates with bootstrapping (*t*-values).

Constructs	Model 1		Model 2	Model 3		
	Innovation Capability	Marketing Capability	Firm Performance (FP)	Innovation Capability	Marketing Capability	Firm Performance (FP)
Organizational Culture (OC)						
1. Clan culture	0.293(3.990) ***	0.157(2.544) ***	0.275(4.240) ***	0.301(4.182) ***	0.151(2.252) **	0.086(1.483)
2. Adhocracy culture	0.222(3.008) **	0.188(2.706) **	0.349(6.157) ***	0.218(2.870) **	0.207(3.063) **	0.190(2.921) **
3. Hierarchy culture	−0.095(0.778)	−0.130(1.482)	−0.162(0.941)	−0.178(2.005) *	−0.196(2.460) *	−0.103(0.633)
4. Market culture	0.249(3.887) ***	0.531(7.549) ***	0.282(5.890) ***	0.255(4.255) ***	0.431(6.091) ***	0.043(0.799)
Firm Capabilities (FC)						
5. Innovation capability						0.443(5.687) ***
6. Marketing capability						0.280(3.934) ***
Controls						
Financial Class						
D1K1						−0.104(2.116) *
D2K2						−0.123(2.507) *
D3K3						−0.134(2.658) *
ICFC	0.057(0.533)	−0.108(1.454)	−0.062(0.954)			0.050(0.424)
R-Square	0.352	0.499	0.504	0.347	0.395	0.652
Q-Square	0.243	0.230	0.378	0.245	0.203	0.497

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4.3. Mediation Analysis

We conducted mediation analysis to assess the mediating roles of dimensions of firm capabilities on the association between types of organizational culture and firm performance. The results of the mediation analysis is shown in Table 5. Using Baron and Kenny's [122] recommendations, both the total and direct effects of the relationship between OC types and FP were assessed for their significance before the indirect effects. For clan culture, the total effect on firm performance is significant ($\beta = 0.262$, $t = 3.864$, $p < 0.001$). However, with the presence of innovation capability and marketing capability as mediating variables, the impact of clan culture on performance is insignificant ($\beta = 0.086$, $t = 1.491$, $p > 0.1$). Given that the indirect effect of clan culture on firm performance through innovation capability ($\beta = 0.133$, $t = 3.554$, $p < 0.001$) and marketing capability ($\beta = 0.042$, $t = 1.873$, $p < 0.1$) are both significant, we conclude that the relationship between clan culture and firm performance is fully mediated by innovation and marketing capabilities. Thus, hypotheses H8a and H8b are supported.

Table 5. Results of indirect effects with bootstrapping (based on Model 3).

Hypothesis	Specific Indirect Effects				
	Coefficient	SD	*T*-Value	*p*-Value	BI (2.5%; 97.5%)
H8a: Clan → Innov Cap → Firm Perf.	0.133	0.038	3.554	**0.000** ***	0.049; 0.198
H8b: Clan → MrktCap → Firm Perf.	0.042	0.022	1.873	**0.061** †	0.007; 0.085
H9a: Adhoc → Innoc Cap → Firm Perf	0.097	0.041	2.380	**0.017** *	0.024; 0.160
H9b: Adhoc → Mrkt Cap → Firm Perf	0.047	0.021	2.235	**0.025** *	0.014; 0.098
H10a: Hierach → Innoc Cap → Firm Perf	−0.062	0.032	1.898	**0.058** †	−0.133; −0.023
H10b: Hierach → Mrkt Cap → Firm Perf	−0.044	0.022	2.030	**0.042** *	−0.097; −0.009
H11a: Market → Innoc Cap → Firm Perf	0.089	0.028	3.109	**0.002** **	0.043; 0.160
H11b: Market → Mrkt Cap → Firm Perf	0.097	0.035	2.798	**0.005** **	0.039; 0.176

Note: † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

For adhocracy culture, there was a significant direct effect ($\beta = 0.190$, $t = 2.833$, $p < 0.01$) and total effect ($\beta = 0.344$, $t = 5.566$, $p < 0.001$) on firm performance. Additionally, the indirect effect of adhocracy culture on firm performance through innovation capability ($\beta = 0.097$, $t = 2.380$, $p < 0.05$) and marketing capabilities ($\beta = 0.058$, $t = 2.525$, $p < 0.05$) were both significant. Thus, the effect of adhocracy culture on firm performance is partially mediated by both innovation and marketing capabilities. Therefore, hypotheses H9a and H9b are supported. Although the indirect effects of hierarchy culture on firm performance

through innovation capability (β = −0.079, t = 1.950, p < 0.1) and marketing capability (β = −0.055, t = 2.122, p < 0.05) are both significant, the direct effect (β = −0.103, t = 0.631, p > 0.1) and total effects (β = −0.237, t = 1.324, p > 0.1) are insignificant.

Based on Baron and Kenny's [122] method, the condition precedent for an association between hierarchy culture and firm performance in testing for mediation is absent. However, Hayes [123] (p. 119) maintains that "it is the test of the indirect effect that matters and not the individual paths…..". Therefore, following Hayes's [123] principle means that both innovation and marketing capabilities mediate the relationship between hierarchy culture and firm performance and hypotheses H11a and H11b are supported.

With regards to market culture, the total effect on firm performance is significant (β = 0.323, t = 4.722, p < 0.001) and becomes insignificant in the presence of innovation and marketing capabilities (β = 0.046, t = 0.865 p >0.1). The indirect effect of market culture on firm performance through innovation capability (β = 0.089, t = 3.109, p < 0.01) and marketing capabilities (β = 0.097, t = 2.798, p < 0.01) are both significant. The implication is that innovation and marketing capabilities fully mediate the relationship between market culture and firm performance. Therefore, hypotheses H2d and H3d are supported.

5. Discussion of Findings

This study's main aim was to examine how organizational culture directly contributes to construction firm performance or indirectly through innovation and marketing capabilities. Specifically, the results provide empirical support for the mediational role of firms' capabilities within the culture–capability–performance linkage.

The results show differences in the relevance of different organizational culture types for firm performance. While clan culture, adhocracy culture and market culture have positive and significant effects on firm performance, hierarchy culture does not. Therefore, flexibility and externally oriented values are better predictors of construction firm performance in times of economic downturn than rule-based and internally focused companies. While findings of the current study show clan culture, adhocracy culture, and market culture to be positively related to firm performance, the evidence regarding such connections is conflicting, as previous studies have found significant positive effects of clan, adhocracy, and market culture on firm performance [17,30], insignificant effects of market and hierarchy culture [14], and significant adverse effects of hierarchy culture and market culture on firm performance [17]. The results also show that adhocracy culture profoundly impacts firm performance in a challenging economy.

Moreover, innovation and marketing capabilities are essential in linking a firm's culture and performance. Whilst partially explaining the adhocracy culture–firm performance relationship, they fully explain the relationship between clan, hierarchy, or market culture with firm performance, although hierarchy culture is negatively related to innovation and marketing capabilities.

Regarding culture types and dimensions of firm capabilities, the findings are consistent with previous studies [14,15,29], especially the positive and significant association between norms of adhocracy culture and innovation. Norms such as freedom and flexibility, risk-taking, trust and openness, less bureaucracy, and environmental awareness underscore creativity and innovation. Since adhocracy culture is also externally oriented on the CVF scale, the results indicate a positive and significant link to marketing capabilities.

The link between clan culture and innovation is inconclusive in the literature. On one hand, clan culture norms such as teamwork, flexibility, communication, empowerment, and commitment [30,40,42] enhance innovation. On the other hand, emphasis on internal orientation inhibits innovation. The results of this study reveal a significant positive relationship between clan culture and innovation capabilities. Whilst it is expected that the values of an internally focused clan culture will inhibit marketing capabilities, the result is contrary to this expectation. Hence, clan culture is positively and significantly linked to marketing capabilities.

Furthermore, the association between market culture and the two dimensions of firm capabilities are positive and significant. Even though bureaucratic, market culture exudes values of competitiveness, customer orientation and goal achievement. These values align well with marketing capabilities, leading to the most profound impact on marketing capabilities. Customer orientation and competitiveness values may cause a positive and significant association between market culture and innovation capabilities. Integration of customer concerns into production may lead firms to emphasize innovative capabilities to meet customer expectations and maintain or gain additional market share.

5.1. Theoretical Implications

Organizational culture is conceptualized in the literature as a socially intricate system of firm values, norms, and routines, which in turn has the propensity to generate causal ambiguity [13]. Therefore, the study was premised on the fact that OC will be more valuable, show more extraordinary uniqueness, and be more difficult to replicate when combined with domain-specific capabilities. Given the findings, this study offers some theoretical contributions. First, although the literature [13,14] affirms the direct effects of OC on FP, there is limited understanding of how OC translates to firm performance, causing researchers to advocate investigating mediating variables between OC and FP. Consequently, realizing the performance impact of OC is contingent on the "doing" component that aligns with OC. These research findings support this view and reveal that when OC is co-aligned with appropriate firm capabilities, it becomes difficult for rivals to decipher the reason for the firm's competitive advantage, leading to superior performance.

Our study also affirms organizational culture as a source of competitive advantage and relates it to construction firm performance by revealing the relative direct and indirect effects of OC types on firm performance. Specifically, we contribute to the literature on OC—firm capabilities, firm capabilities—FP, and studies investigating mediators between OC and firm performance. Researchers recognize the context-specificity of the impact of OC on FP. This research satisfies the demand for studies of OC and FP to be placed within the framework of engineering and construction companies in a developing country.

Although the link between organizational culture and firm performance has been studied in other sectors, including banking [18], supply chain [62], and the service and non-service sectors [14], the current study applies it to a situation where no research has been carried out on the types of organizational culture and how they relate to dimensions of firm capabilities and performance. Apart from contributing to the discourse of the capability-based theory in the domain of engineering and construction, the study results also support the widely held belief, first articulated by Drucker [26], that innovation and marketing are the two most important responsibilities of any business.

5.2. Managerial Implications

The result of our research offers several managerial implications. First, the findings are a valuable guide for construction organizations seeking to leverage organizational culture for enhanced firm performance. Second, it directs senior managers' attention towards the significance of soft assets in firm performance outcomes, signaling a shift from a purely technical and rationalistic approach to a more adaptable and humanistic approach [36,61]. Third, the study revealed the importance of organizational culture in engendering firm performance relative to financial and non-financial measures. Specifically, construction managers should prioritize adhocracy cultural values during economic recessions since it impacts firm performance most.

The results also lend credence to the view that innovation and marketing capabilities align with organizational culture to achieve superior performance. The implication is that managers should give priority to these two capability dimensions. Perhaps, this will allow them to fulfil the crucial task of building an organization known for churning out new products and services with improved functionality that exceeds customer expectations.

6. Conclusions

The findings of this study must be understood in light of some limitations. First, even though the results highlighted some causality links between organizational culture and firm performance with innovation and marketing capabilities as mechanisms of influence, the data were cross-sectional, and inferences about causality should be drawn with caution. Using longitudinal data and objective measures for firm capabilities and performance in future studies may enhance the ability to infer causality.

Additionally, this research reinforces the importance of the separate effects of innovation and marketing capabilities on firm performance. However, the resource-based view (RBV) posits that complementary resources interact to impact performance [8,9,71,73], and this assertion extends to firm capabilities. Therefore, future research should model the complementarity and interaction effects of innovation and marketing capabilities on firm performance. Although innovation and marketing capabilities have been the subject of this research, and justifiably so, firms possess other capabilities such as managerial [77], technological, operations capabilities [90], and dynamic capabilities [90,124]. Future research can examine how organizational culture interacts with these other capabilities to influence firm performance.

Finally, data for this study was obtained from senior managers of participating firms, with no reference to customers or clients. Future research should expand the target respondents to include customers, particularly for performance indicators such as customer satisfaction and retention.

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Data Availability Statement: All or some of the data used for the study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1. Measurement Scale indicators.

Industry Conditions
Scarce job opportunities;
Increasing cost of building materials and components;
Currency depreciation and high interest rates;
Increasing cost of labor and union agitations;
Limited credit from banks and material and component suppliers.
Innovation Capability
Capacity to use innovative construction processes to meet specifications;
Ability to adapt product/service and process technologies to meet future needs;
Ability to respond to unexpected opportunities arising from change in competitor activities;
Skills in offering a service/product that offers new features on demand;
Ability to support and drive innovation.
Marketing Capability
Ability to develop marketing information about specific client needs;
Ability to offer competitive rates and monitoring pricing in the industry;
Ability to deliver construction products that meet clients demands;
Ability to control and obtain access to credit supply;
Skills in focusing on client recruitment and retention;

Sustainable construction and corporate social responsibility.
Firm Performance
Growth in contract awards;
Profitability;
Employee satisfaction;
Client satisfaction;
Quality of products and services;
Achievement of objectives with fewer resources.
Organizational Culture
Organizational culture assessment instrument (OCAI).

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