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Culture Profile-Structure-Strategy Fit for Digital Transformation in Lagos, Nigeria

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Abstract

Numerous shreds of evidence show the advantage of digital transformation at individual, firm, and industry levels across all business sectors. However, the construction industry remains challenged in adopting an optimal model for digital transformation. This study assesses the organisational culture, structure, and strategy of selected construction firms in Lagos, from the perspective of the nature of the change required for digitalisation. With a hypothesis on the relationship between organisational culture and organisational design in the firms, the objectives of this study are to evaluate the organisational culture and designs that are suitable for construction firms in the digital age. An empirical study was conducted among selected construction firms in Lagos State. Construction firms with a minimum of five years of operations were purposively selected. Adopting the Organisational Culture Assessment Instrument (OCAI) and the Miles and Snows' Strategy Typology, 49 structured questionnaires were administered to managers within the firms. The statistical tools used for the analysis include mean score and Spearman's Rho correlation. The results show that the firms adopt a prevalent *clan culture, a highly formalised structure and defender* strategy in their present transformation bid. The study concludes that the firms' culture is people-rather than process-oriented. An open culture (curious and innovative); a flexible structure (experimentation-friendly) and a strategy that supports gradual but incremental digitalisation are recommended for the firms' leadership as these will make the workplace mobile, and digitally-interactive.

Keywords: Construction firms; Digitalisation; Leadership; Organisational culture; Organisational design; Strategy archetypes

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1. Introduction

Previous studies in the field of strategic management elaborate greatly on the requirements of firms' competitiveness (Augier & Teece, 2009; Ahuja & Novelli, 2017; Cattani, Porac & Thomas, 2017). Literature is also in support of utilising digital strategy and structure to bring about substantial changes in leadership, organisational communication and business models in order to reap the maximum benefits of digital transformation with an appreciable reduction in cost (Grab et al., 2019; Galimova, 2019; Correani, De Massis, Frattini, Petruzzelli & Natalicchio, 2020; Saka, Chan & Siu, 2021). Pandey (2014) describes organisational culture as the collective values, beliefs, and principles of organisational members, which are products of history, market, technology, strategy, and leadership style. Ajmal and Koskinen (2008) reiterate that an understanding of how culture operates, and the machinery that runs it, will let those within the organisation be familiar with its various dimensions and reinforce accordingly.

Both organisational culture and design are imperative to firms for digital transformation (Grab et al., 2019). A formal guided proposal for integrating people, information, and technology to match an organisation to its purpose is termed organisational design. This study conceptualises organisational design as structure and strategy. Two distinct structures operate simultaneously within the context of project management. The first is the overall structure of the organisation that is developing the project. This structure consists of the arrangement of all the participants such as top management, functional departments, and other relevant stakeholders. The second structure at work is the internal structure of the project team; it specifies members' roles and responsibilities, and their interaction with the project head. In this context, the structure is the internal organisational system that depicts how tasks are shared, the extent to which formalised rules are used, and authority relationships.

According to Burns and Stalker's (1961) argument, a firm's environment determines its optimal structure. Burns and Stalker (1961) and Lunenburg (2011) identify organic and mechanistic structures as two types of structures that exist as a continuum. In a mechanistic structure, authority, control, and decision-making are at higher levels, with highly formalised roles, responsibilities, and standardised work processes. Within this structure type, knowledge and competence reside mainly with top management. At that level, creativity and learning are discouraged. Conversely, in an organic structure, those who are in the custody of the right knowledge and experience take decisions, as the authority is based on knowledge and competencies rather than the level occupied in the hierarchy (Hatch & Cunliffe, 2006).

According to Lunenburg (2011), the standardisation of skills and autonomy is instrumental to firm digitalisation. Therefore, digitalisation is supported as a firm moves from the mechanistic to the organic structure continuum. This is so because an organic structure fits in well with environmental dynamism, turbulence, or hostility. High formalisation reduces creative thinking and an autonomous-working environment (Ibadin & Ibadin, 2011), but it is related to efficient strategy implementation. Likewise, decentralised and informal structure enhance digitisation (Lunenburg, 2011). Organisational structure – a subset of organisational design – therefore, matters to transformation.

Despite the numerous ways through which transformation has occurred at firms' and

individual levels, and evident as well as presumed advantages; organisations are still challenged in adopting the optimal model for transformation (Fitzgerald, Kruschwitz, Bonnet & Welch, 2014; Zhen, Yousaf, Radulescu & Yasir, 2021). This study, therefore, examines the culture, structure, and strategy required by construction firms in the transformation journey.

The purpose of the study is to examine the culture and organisation design that is suitable for the digital age. This study is necessary because, on the one hand, previous studies on firm competitiveness emphasise the importance of the internal and external environment. On the other hand, insights on firms' trajectory towards digital transformation, abound. However, recent information on digitalisation stresses that for competitiveness, profitability, growth, and economic strength, the adoption of digital technology is inevitable for the realisation of the required changes that are deemed fit (Foerster-Metz, Marquardt, Golowko, Kompalla & Hell, 2018; Shen, Sun & Ali, 2021; Pereira, Durão, Moreira & Veloso, 2022). Therefore, the prevailing culture profile, structure, and strategy of selected construction firms are assessed and hypotheses developed on their interrelationship. This is with a view to assisting construction firms to develop or adopt a suitable organisational culture and design for digital transformation.

2. Organisational culture, strategy, and digitalisation conceptualised

Digitalisation according to Loebbecke and Picot (2015) is an established pattern of change that is triggered by innovation. Porter and Heppelmann (2014) present three waves of digitalisation. The first wave that spanned between the 1960s and 1970s was characterised by the profound automation of major activities along the value chain. The second wave, which spanned between the 1980s and 1990s, witnessed the use of internet of things (IoT). Then, the third wave, which is the present, commencing from the 1990s, heralded the combination of information technology with artificial intelligence in products and processes (Olleros & Zhegu, 2016; Alshawaaf & Lee, 2021). The fourth wave, whereby technologies meet intellectual capability, is proposed (Ulwick, 2005).

Though digitalisation and its tools keep evolving, firms' theory challenged the rules of competence and competitive advantage. Markus and Loebbecke (2013) in their submission buttressed this, saying that the massive adoption of digitalisation tools and their standardisation is not sufficient for competitive advantage. Part of this rule, from the executive summary of Deloitte, covers the harmonisation of people, culture and organisation (Nanda, Gurumurthy, Roddick, Golden, Sniderman & Kearns-Manolatos, 2021). Apart from culture, strategy is imperative to digitalisation (Ross, Sebastian & Beath, 2016; Warner & Wäger, 2019). According to Ross et al. (2016), two major types of strategy are beneficial to firms' digitalisation trajectory. These are customer-oriented and digitally-oriented strategies. The strategic archetype posited by Miles and Snow (1978) is adopted in this study due to its generic business-level and industry-independent nature (Hambrick, 1983).

Miles and Snow's typology is divided into four strategic types: defenders, prospectors, analysers, and reactors (See figure 1). *Prospectors* are leaders in innovation and creators of change to which their competitors respond. Prospectors thrive in innovative, dynamic environments as they react positively. *Defenders* are characterised by a narrow focus on the business area but with great expertise. Due to the narrow focus, minimal or no adjustment is needed in the technology, structure, or methods of operation. Defenders flourish when there is market stability. *Analysers*

possess dual-role. In stable environments, the organisations operate effectively and efficiently through formalised rules and procedures. In turbulent periods, the top managers watch competitors keenly for better ideas. *Reactors* lack consistent strategy (Sollosy, 2013). The prevailing culture and organisational design are thus parameters for achieving digitalisation (Cosh, Fu & Hughes, 2012; Bolman & Deal, 2017).

The two schools of thought on culture paradigm are: the phenomenological and functionalist approaches. The first, the phenomenological, dwells on understanding and defining the meaning of culture. The second school, the functionalist, centres on the consequences of organisational culture. A greater percentage of empirical cultural research is largely from the functionalist perspective. Within this context, organisational culture is defined and measured in a variety of methods such as culture strength, culture traits, culture congruence, culture types, or shared values. In addition to the variables, the functionalist approach splits organisational culture into two: culture as a 'variable' and culture as a 'root metaphor' (Giritli, Öney-Yazıcı, Topçu-Oraz & Acar, 2013; Zakariyyah, John & Ijaola, 2021). Proponents of culture as a variable believe the concept serves four main functions: providing members of an organisation with a sense of identity, facilitating the commitment to a larger whole, enhancing social system stability, and serving as a sense-making device that can guide and shape the behaviour of organisational members (Giritli et al., 2013).

Culture, therefore, strategically influences and direct organisational course of action (Yilmaz & Ergun, 2008). The conceptualisation of culture as a variable paves way for linking success in organisations to cultural adaptations, thereby drawing insights for digitalisation.

Thus, digitalisation remains a case of organisational change, innovation and integration. Innovation, on the one hand, covers the application of resources in conjunction with processes and capabilities. Integration, on the other hand, relates to merging and aligning both new and existing procedures. We posit, following (Hanelt, Bohnsack, Marz & Antune, 2021), that Cultural change, in the form of innovation and/or integration, with the right structure and strategy has many advantages. It will aid in efficient information collection, improve tracking and labour-material optimisation and thus level up business processes for higher productivity. To further emphasise the importance of culture, structure, and strategy, Cegarra-Navarro, Papa, Garcia-Perez, and Fiano (2019) submit that an open organisational culture that is derived from an open-minded attitude and a firm's dedication to innovation is a major driver for digitisation and sustainability.

Figure 1: Miles & Snow Strategy Typology

3. Methodology

This study aims at identifying suitable culture profile, structure, and strategy in construction firms in Lagos metropolis. The questionnaire for the culture profile was adapted from the Cameron and Quinn's (2006) Organisational Culture Assessment Instrument (OCAI) and was administered to construction managers. The instrument is chosen because it proved to be the most valid and reliable in measuring organisational culture both within and outside the construction industry (Ankrah, 2007). To examine the culture profile of the organisations, the respondents indicated their level of agreement with a series of statements relating to where importance is placed within the organisation; using a scale of '1' for strongly disagree, '2' for disagree, '3' for indifferent, 4' for agree and '5' for strongly agree. An organisation is described based on the culture profile with the highest mean score.

To determine the organisational structure used by construction firms, three components of formality, centralisation, and complexity were adopted. Formality (FOR) measures the extent to which formal rules and procedures are stipulated and adhered to. Complexity (COM) relates to the division of task units. Centralisation (CEN) measures the extent to which authority resides in top management. These three variables have 10 scales. The respondents were asked to indicate the priority accorded to the dimensions of structure on a Likert scale of '1' to '5' from no priority to very high priority. The mean for each dimension was, thus, calculated to determine the priority accorded by the firms.

The strategy archetype of Miles and Snow (1978) was adopted with slight modifications. This divides strategy into four, namely: prospector, defender, analyser, and reactor strategies. Reactor organisation is strategy less, and it is unlikely in a construction organisation, so it was not considered. To determine the organisational strategy, the respondents were asked to indicate the priority accorded the dimensions of the three strategic archetypes on a Likert scale of '1' to '5' from no priority to very high priority. The mean score for each dimension was calculated to determine the most prominent strategy. The sample was purposively selected from firms that have been in existence for over 5 years in the study area**.** 49 structured questionnaires were administered to the respondents through personal contact while 31 (representing 63.3%) were retrieved and found usable. The Statistical Package for Social Sciences (SPSS) Version 23 was used for the analysis.

4. Results

4.1 Respondents Profile

Table 4.1: Respondents' profile

Respondents' background	Frequency	Percentage	Respondents' background	Frequency	Percentage
Gender			**Marital Status**		
Male	30	93.8	Single	5	15.2
Female	2	6.3	Married	28	84.8
Total	**32**	**100**	**Total**	**33**	**100**
Educational Qualification			**Professional Membership Cadre**		
HND	13	41.9	Graduate	11	34.4
B.Sc.	7	22.6	Corporate	15	46.9
M.Sc.	11	35.5	Fellow	6	18.8
Ph.D.	0	0.0	**Total**	**32**	**100**
Total	**31**	**100**			
Professional Affiliation			**Work Experience**		
NIA	1	3.2	1-5 years	5	15.2
NSE	4	12.9	6-10 years	9	27.3
NIOB	22	71.0	11-20 years	11	33.3
NIQS	3	9.7	21-30 years	5	15.2
Others	1	3.2	31 years above	3	9.1
Total	**31**	**100**	**Total**	**33**	**100**
Involvement			**Nationality**		
Yes	32	100	Nigerian	33	100
No	-	-	Non-Nigerian	---	---
Total	**32**	**100**	**Total**	**33**	**100**

Table 4.1 shows the respondents' profile. Out of the 33 valid responses received, 30 respondents (94%) are males while the remaining (6 %) are females. These figures reflect the prevalent trend of gender spread in the construction industry in Lagos metropolis.

From the demographic data, 13 respondents (42%) have Higher National Diploma (HND), 7 (22%) possess Bachelor of Science (B.Sc.) certificates while the remaining 11 (36%) have Masters' degree (M.Sc.) as their highest educational qualifications. Hence, the respondents are academically sound to respond to the questionnaire. For professional affiliation, majority of the respondents (71%) have the Nigerian Institute of Building (NIOB) membership status, while the remaining 29% consist of Engineers (12.9%), Architects (3.2%), Quantity Surveyors (9.7%) and others (3.2%). While 11 (34.4%) belong to the Graduate membership cadre, 15 representing 46.9%, and 6 (18.8%) are corporate members and fellows respectively. This is an indication that respondents are from purely contractors' organisations.

Regarding the years of experience, 15.2% have worked for about 5 years, 9 respondents (27.3%) belong to the 6-to-10-year band, followed by 33.3% for 11 to 20 years and the remaining percentage for those with over 21 years of experience. All the respondents (100%) have major involvement in the organisation's development. This implies that more than 50% of the organisations surveyed have been in existence for a minimum of 10 years and thus have the needed exposure to organisational routines and management. In addition,

all the respondents have involvement in the management of the organisations. These results also indicate that respondents are experienced, educated and mature enough to address the research questions.

4.2 Organisational Demographics

Table 4.2: Organisational Demographics

Respondents' background	Frequency	Percentage	Respondents' background	Frequency	Percentage
Firm Age			**Procurement type 1**		
6-10 years (YF)	9	29	**DBB: Project type**		
11-20 years (IF)	9	29	Building	24	92.3
Above 21 years (OF)	13	42	Engineering	2	7.7
Total	**31**	**100**	**Total**	**26**	**100**
Number of Employees			**Construction type**		
Less than 50	19	57.6	New	15	79
51-100	2	6.1	Maintenance	4	21
Above 100	12	36.3	**Total**	**19**	**100**
Total	**33**	**100**	**Labour only**		
Construction Type			**Project type**		
New construction only	2	6.3	Building	11	78.6
Renovation only	1	3.1	Engineering	3	21.4
Both new and old	29	90.6	**Total**	**14**	**100**
Total	**32**	**100**	**Construction type**		
Estimated Turn-over			New	9	75
₦1 - ₦10 million	6	19.4	Maintenance	3	25
₦11 - ₦50 million	4	12.9	**Total**	**12**	**100**
₦51 -₦199 million	12	38.7	**Design and Build**		
Over ₦200 million	9	29	**Project type**		
Total	**31**	**100**	Building	13	93
Estimated Outlay			Engineering	`1	7
₦1 - ₦5 million	7	23.3	**Total**	**14**	**100**
₦6 - ₦500 million	16	53.3	**Construction type**		
Over ₦500 million	7	23.3	New	10	83
Total	**30**	**100**	Maintenance	2	17
Business type			**Total**	**12**	**100**
Sole proprietorship	8	24.2	**Procurement type 2**		
Partnership	3	9.1	**Project type**		
Private Limited Liability	15	45.5	Building	27	87
Public Limited Liability	4	12.1	Engineering	4	13
Corporations	3	9.1	**Total**	**31**	**100**
Total	**33**	**100**	**Construction type**		
			New	21	81
			Maintenance	5	19
			Total	**26**	**100**

Table 4.2 depicts the organisational characteristics of respondents' firms. In terms of duration of organisational existence, most of the firms have been operating for over 5 years. Thus, they can be said to possess the managerial resources and capabilities required for continued existence and growth. Nine (29%) firms are within 6 to 10 years. This group is taken as young firms (YF). Another 29% is in the class of 11 to 20 years. These are termed intermediate firms (IF). The third group which comprises 13 firms (42%) comprises is those that have spent over 21 years in

existence. These are classified as old firms (OF). For the estimated annual turnover, there are 19.4% with an estimated annual turnover of N1 to N10 million, 12.9% is in the range of N11 to N50 million, and 38.7% spans the N51 to N199 million band with the remaining 29% having over N200 million. Concerning the estimated capital outlay, more than half of the firms (53.3%) lie within the N6 to N500 million category. The remaining percentage (46.6%) is shared equally between less than N5 million and over N500 million as the estimated capital outlay. This implies that the majority of the organisations have executed projects of appreciable value and also have the needed financial capability for existence.

As regards the type of business undertaken, 3 (9.1%) are in partnership, 4 (12.1%) are public limited liability, 3 (9.1%) are corporations while 8 (24.2%) and 15 (45.5%) are sole proprietorships, and private limited liability companies respectively. This is an indication of each firm being able to take decisions as a single entity as over 60% are either sole proprietorships or private limited liability companies.

For the traditional procurement types (procurement type 1), the majority of the contracts undertaken are building projects (78% and above). Most of the contracts are also new constructions (75% and above). Under the integrated procurement system (procurement type 2), building contracts are 87% while new constructions constitute 81%. Generally, there is a reflection of a major percentage of the contracts are executed under the traditional method of procurement and more building than engineering projects, most of which are new undertakings. This should not have been otherwise as most of the respondents are registered members of the professional body for the building profession.

4.3 Organisational Culture

Table 4.3: Descriptive statistics for culture profile

Culture Profile	Culture Profile Dimensions						Total score	Average score	Rank
	DC	OG	OL	ME	CS	SE			
Clan	**3.77**	**3.85**	**3.69**	**4.00**	**4.04**	**3.88**	**23.23**	**3.87**	**1**
Hierarchy	***3.96***	***4.00***	***4.04***	***3.56***	***3.68***	***3.48***	***22.72***	***3.79***	***2***
Market	4.04	4.04	3.73	3.96	2.81	3.92	22.50	3.75	3
Adhocracy	3.69	4.04	4.08	3.27	3.50	3,62	22.20	3.70	4

1 = Strongly Disagree 2 = Disagree 3 = Indifferent 4 = Agree and 5 = Strongly Agree

Table 4.3 shows the average scores of the respondents. The four measures of the culture profile are above the midpoint (3.5). Cameron and Quinn (2006) argue that respondents tend to rate all quadrants high or low. From Table 4.4, the overall culture profile is *Clan* (3.87) which is followed closely by the *Hierarchy* (3.79). The *Market* (3.75) came third while the *Adhocracy* (3.70) has the least score. This implies that the organisations' predominant culture profile is that of "family-type, employee-focus" (clan) and "internal process" (hierarchy). This shows that the organisation is closely knitted with an interest in internal arrangements to achieve project objectives. In order words, the values consistent with the sampled firms are those with team integration, cooperation, smooth functioning, and stability. The characteristics that are consistent with 'external focus' and 'differentiation', which demand hard-driving leaders and the need for strategic edge (market) appeared to be upcoming, whereas, the values consistent with

entrepreneurial spirit, dynamism, and cutting-edge construction methods (adhocracy) are less emphasised. This is in line with studies from other countries, whereby the cultural profile of the construction firm is clan and hierarchy (Novana & Ogunlana, 2006).

4.4 Organisational Structure

Table 4.4: Descriptive statistics for organisational structure

Organisational Structure	*N*	Mean	Std. Deviation	Rank	Priority Accorded
Complexity (COM)	25	4.02	.71049	1	High Priority
Formalisation (FOM)	25	3.93	.79349	2	High Priority
Centralisation (CEN)	25	3.73	.86066	3	High Priority

Note: 1.00-1.49 for 1, No priority; 1.50-2.49 for 2, low priority; 2.50-3.49 for 3, moderate priority; 3.50-4.49 for 4, high priority, and 4.50-5.00 for 5, very high priority

Table 4.4 shows the mean scores for the three components of a structure. The three components (formalisation, complexity, and centralisation) have mean scores that are well above 3.50. Low complexity, high centralisation, and high formalisation are typical of mechanistic organisations while high complexity, low centralisation, and low formalisation are features of organic organisations. Mintzberg (1990) explains that structure is considered mechanistic when its behaviour is standardised. The organisations surveyed are characterized by high formalisation, high complexity and high centralisation as indicated in Table 4.4. In placid environment, organisations tend to be highly centralised and highly formalised. The need to decentralise decision-making process may be warranted by digitalisation. The presence of high standardisation, formalisation, and centralisation indicates that the organisations are moving along the continuum of mechanistic and organic structures.

4.5 Organisational Strategy

Table 4.5: Descriptive statistics for organisational strategy

Organisational Structure	N	Mean	Std. Deviation	Rank	Priority Accorded
Analyser (ANA)	24	3.69	.71049	1	High Priority
Defender (DFD)	24	3.63	.88326	2	High Priority
Prospector (PSP)	25	3.43	.76932	3	High Priority

Note: 1.00-1.49 for 1, No priority; 1.50-2.49 for 2, low priority; 2.50-3.49 for 3, moderate priority; 3.50-4.49 for 4, high priority, and 4.50-5.00 for 5, very high priority

From the strategy types in Table 4.5, the three strategy archetypes have higher mean scores. However, the score for the prospector is the lowest. This indicates that the construction managers are Analysers and Defenders. According to Miles and Snow (1978), Defenders have a narrow focus or limited area of operation. As a result of the narrow focus, they tend to make little or no adjustment in their structure or technology but rather concentrate on efficient and effective delivery of their limited or narrow range of products or services. Analysers are ambidextrous; they tend to operate efficiently using formalised structures when the environment is placid and watch their competitors keenly to know the type of steps to be taken when the environment is turbulent, that is the managers choose their strategies in response to the prevailing environment.

4.6 Relationship among Culture Profile, Structure and Strategy

H_1: There is no significant relationship between organisational culture and organisational design in the firms surveyed.

To test the hypothesis postulated above, Spearman's Rho correlation was run among the variables. The correlations matrix on the four culture profiles (clan, hierarchy, market, and adhocracy) and structure variables (formalisation, centralisation, and complexity) is shown in Table 4.6.

Table 4.6: Result of test for correlation between culture and structure

Parameters correlated Structure and Culture	MS	SD	r-val	p-val	Corr	Decision
Formalisatio n	3.93	0.678				
Clan	3.95	0.553	0.153	0.094	NS	Accept
Adhocracy	3.93	0.618	.206*	0.024	SS	Reject
Market	3.93	0.572	.263**	0.004	SS	Reject
Hierarchy	3.94	0.561	.223*	0.014	SS	Reject
Centralisation	3.85	0.660				
Clan	3.95	0.553	.255**	0.005	SS	Reject
Adhocracy	3.93	0.618	.288**	0.001	SS	Reject
Market	3.93	0.572	.359**	0.002	SS	Reject
Hierarchy	3.94	0.561	.295**	0.001	SS	Reject
Complexity	3.82	0.626				
Clan	3.95	0.553	0.089	0.337	NS	Accept
Adhocracy	3.93	0.618	0.146	0.115	NS	Accept
Market	3.93	0.572	.244**	0.008	SS	Reject
Hierarchy	3.94	0.561	0.166	0.073	NS	Accept

*Correlation is significant at the 0.05 level (2-tailed)

Note: NS- Not Significant, SS- Significant, MS = Mean Score, SD = Standard Deviation, r-value = Correlation value, p-value = Critical value

Starting with the results of the relationship between formalisation and the four culture profile as presented in Table 4.6, the p-value (0.094) for the test of the relationship between formalisation and clan profile is greater than the critical p-value (0.05). Therefore, the decision was to accept the hypothesis which states that there is no significant relationship between formalisation and clan profile. The result implies that clan profile does not influence formalisation. This means the prevalence of clan profile does not contribute to how formalised rules and job instructions are in construction firms.

The p-value (0.024) for the test of the relationship between formalisation and adhocracy profile, formalisation and market profile as well as formalisation and hierarchy profile is lower than the critical p-value (0.05). The hypothesis is, therefore, rejected. The implication is that the

prevalence of hierarchy, market, and adhocracy profile contribute to the prevalence of formalisation. That is, the higher the level of prevalence of adhocracy profile, the more the level of written instructions, and the higher the level of prevalence of market profile, the more the adoption of rules, specifications, and instructions. This implies that aside from clan culture, other profiles contribute to formalisation.

4.7 The results of the test of the relationship between culture profile and strategy are presented here.

Table 4.7: Result of test for correlation between culture and strategy

Parameters correlated	MS	SD	r-val	p-val	Corr.	Decision
Culture and Strategy						
Prospector	3.81	0.565				
Clan	3.95	0.553	.237**	0.009	SS	Reject
Adhocracy	3.93	0.618	.247**	0.006	SS	Reject
Market	3.93	0.572	.275**	0.002	SS	Reject
Hierarchy	3.94	0.561	.246**	0.006	SS	Reject
Defender	3.91	0.549				
Clan	3.95	0.553	.245**	0.007	SS	Reject
Adhocracy	3.93	0.618	.242**	0.008	SS	Reject
Marke t	3.93	0.572	.343**	0.004	SS	Reject
Hierarchy	3.94	0.561	.295**	0.001	SS	Reject
Analyser	3.86	0.662				
Clan	3.95	0.553	0.167	0.068	NS	Accept
Adhocracy	3.93	0.618	.235**	0.001	SS	Reject
Market	3.93	0.572	.296**	0.001	SS	Reject
Hierarchy	3.94	0.561	.200*	0.029	SS	Reject

*Correlation is significant at the 0.05 level (2-tailed)

Note: NS- Not Significant, SS- Significant, MS = Mean Score, SD = Standard Deviation, r-value = Correlation value, p-value = Critical value

For author: Which of these variables measure digitisation?

4.8. Discussion of Findings

The overall culture profile among the construction firms surveyed is "*clan (family)"* culture, which is followed closely by the "*hierarchy (bureaucratic*)" culture. The culture profile of the firms is not distinct. The first two are *clan* and *hierarchy* which are internally inclined, the next two are market and adhocracy which are externally inclined. Though the scale is quite close, it reveals that the firms are more inclined to internally-oriented culture. These culture types, on the one hand, encourage unity by fostering relationships. For instance, clan culture does not allow the right employee mix or talent attraction because it establishes a family relation. Hierarchical

culture, on the other hand, does not enhance creativity nor allows freedom for experimentation; firms in this category of internal model do not belong to the 'falling forward' firms that allow mistakes through experimentation and learn from their errors.

The findings reveal a structure that is complex, highly formalised, and centralised. A fixed or rigid structure that is complex and highly formalised would not encourage innovation because formality, high centralisation and high complexity define a mechanistic organisation. However, without creativity, innovation, and learning, digitalisation will be stalled. In addition, the strategy archetypes depict more of a Defender and Analyser than Prospector**,** whereby proactive managers reside.

5. Conclusion and Recommendations

This study evaluates the organisational culture, structure and strategy among construction firms in Lagos metropolis with a view to proposing an organisational culture-structure-strategy fit for digital transformation. The results reveal an overall clan culture. The predominant structure is mechanistic and the prominent strategy archetypes are defender and analyser. The findings indicate that the construction firms surveyed possess dominant characteristics that are 'internally-focused and people-oriented.' The degree to which the workers are provided with explicit rules and procedures is high (high formalisation). The firms' activities are also dispersed (high complexity). As a result, the extent to which the culture allows autonomy is less; this is also seen in the structure that is complex and formalised. Based on the findings, the study concludes thus: should the firm desire formalisation, it must not adopt a clan culture. If it desires centralisation, it can adopt any of the culture profiles. A firm that is desirous of complexity, should choose a market culture. If the firm requires prospector or defender strategy, any of the culture profiles suffice and when the requirement is analyser strategy, it must not be with a clan culture.

Overall, clan culture is not ideal for digitalisation while market, adhocracy and hierarchy are desirous. The firms' leadership, therefore, needs to adopt a culture that allows autonomy and creativity; a structure that is boundary-less and encourages scalable learning, as well as a strategy that provides the needed digital infrastructure that makes the workplace mobile, and digitally-interactive.

As most studies on strategy are mainly on formulation than implementation, with a greater percentage of time expended on the formulation, this study first highlights the strategy archetypes required for digitalisation in construction firms. This is also related to the structure and the culture profile. Secondly, the study reveals the combination of culture profile, structure, and strategy that could aid or mar the transformation journey. Thirdly, this study reveals the culture and structure dimensions within construction firms that need revision for the attainment of enhanced digitalisation. As regards practical implications, firstly, the findings show that construction managers need organisational changes to enhance digitalisation of firm processes. Secondly, the firms' leadership needs to take digitalisation in bits by harmonising both old and new business models. Thirdly, the result presents a culture profile- structure and strategy combination for a business model in a digital age. The digital readiness of the firms is not measured, thus, future work needs to be conducted on the state of the firms' digitalisation as well as the relationships among the organisational factors. Besides, the preferred dimensions or archetypes can be assessed to determine the extent to which the firms are digitally-inclined.

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