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2019-12-10
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Sibindi, N. & Samuel, O.M., 2019, 'Structure and an unstable business operating environment: Revisiting Burns and Stalker's organisation-environment theory in Zimbabwe's manufacturing sector', South African Journal of Economic and Management Sciences 22(1), a2113.

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South African Journal of Economic and Management Sciences
ISSN: (Online) 2222-3436, (Print) 1015-8812

Structure and an unstable business operating environment: Revisiting Burns and Stalker's organisation-environment theory in Zimbabwe's manufacturing sector

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Dates:
Received: 21 Sept. 2017
Accepted: 29 Aug. 2019
Published: 10 Dec. 2019

How to cite this article:
Sibindi, N. & Samuel, O.M., 2019, 'Structure and an unstable business operating environment: Revisiting Burns and Stalker's organisation-environment theory in Zimbabwe's manufacturing sector', *South African Journal of Economic and Management Sciences* 22(1), a2113. https://doi.org/10.4102/sajems.v22i1.2113

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Background: Turbulent socioeconomic contexts coupled with volatile political environments pose a serious survival threat to business organisations. Complex operational environment of this dimension most often resists application of conventional management theories and practices. Organisational managers are therefore constantly challenged to adopt contingency strategies that will not only keep their organisations afloat, but also entrench competitive advantage that could effectively sustain operations.

Aim: To update Burns and Stalker's theory on structure and business environments.

Setting: The dynamics of the Zimbabwe's economy has assumed an extraordinary proportion of complexity due to intractable political instability and hostile economic environment.

Methods: Using a survey research design and employing quantitative research strategy, this article examines the underlining propositions that defined the seminal work of Burns and Stalker regarding strategy adoption by organisations in a dynamic operating environment. Primary data was collected from 189 randomly selected managers in 350 manufacturing firms operating in Zimbabwe using a structured questionnaire. Data were analysed using structural equation modelling.

Results: The major finding of the present study suggests that firms adopt a hybrid structure when confronted with an unstable operating environment.

Conclusion: The finding is inconsistent with that of Burns and Stalker, who concluded that firms adopt organic structure in an unstable operating environment. While Burns and Stalker's study was conducted in a relatively stable socioeconomic context, the present study was conducted in an operating environment that is characterised by turbulent socioeconomic and political instability. These environmental divergences could have influenced the outcome of both studies.

Keywords: Burns and Stalker; competitive advantage; contingency approach; organisational structure; mechanistic structure; organic structure; political instability; underdeveloped economies; unstable operating environment.

Introduction

Zimbabwe's business operating environment has been characterised by extremely volatile circumstances. It has been described as the most unstable environment outside a war zone (Moyo 2010). The inconsistency of policies has resulted in the unstable socioeconomic situation that makes it difficult for businesses to operate. The major challenge posed by the scenario described above has necessitated the need for businesses to structure themselves in order to survive the hostile operating environment.

Organisational and management literature is dominated by the seminal works of Burns and Stalker (1961) on how businesses can structure themselves in different operating environments (Daft 2001, 2013; Griffin & Moorhead 2014; Robbins et al. 2011). Responding to environmental changes in the 1960s as a result of technological and market forces, Burns and Stalker (1961) developed two propositions on how organisations should structure themselves in order to mitigate the impact of the emerging changes. Starting from the open systems approach to organisations, Burns and Stalker proposed that in stable operating environments, organisations

should adopt a mechanistic structure and, conversely, in unstable environments, it is best for organisations to adopt an organic structure. The current study is interested in the second proposition by Burns and Stalker which has received empirical support by other studies (Sine, Mitsuhashi & Kirsch 2006) conducted in turbulent and uncertain economic environments in the United States of America and the United Kingdom. A research gap has therefore emerged for Burns and Stalker's propositions to be empirically verified in a highly unstable and uncertain operating environment such as Zimbabwe.

Mechanistic structure finds its origin in the works of Weber (1947) and is defined by its characteristically low complexity, high centralisation, high formalisation and high stratification. On the other hand, an organic structure is highly complex and has low formalisation, centralisation and stratification (Burns & Stalker 1961; Etzioni-Halevy 2010; Hage 1965). The post-World War II (1946–1970) economy in Europe in general and in Britain and Scotland in particular experienced government's initial reduction and subsequently removal of defence contracting thus exposing most firms to competition (Miner 2006). These environmental changes inevitably necessitated the need for firms to devise a competitive way of surviving. It was against this background that Burns and Stalker (1961) conducted their seminal study which sought to determine the best structure that organisations could adopt in a dynamic operating environment. Burns and Stalker's work was further influenced by the open system approach of organisations and the emerging contingency theory (Miner 2006). This influence was accentuated by the apparent inability of both the classical and scientific management and human relations theories to resolve the complexities occasioned by environmental changes (Ashton, Hopper & Scapens 1995).

The failure of these theories thus led Burns and Stalker to seek explanation for the influence of external environment on organisational design. This was an attempt by the authors to adopt a macro approach, rather than the predominant micro structural approach by sociologists (Miner 2006). The study concluded that the 'the utility of the notions of mechanistic and organic management systems resides largely in their being dependent variables to the rate of environmental change' (Burns & Stalker 1961:103). Environmental change in this context refers to the technological bases of production and market situation. This change has therefore defined the nature and pace of contemporary business environments as distinct from factors that drove operating environments in the early 1900s. Fundamentally different from technological and market orientation factors are prevailing profound political, economic, social and legal environments that have variously combined to define the environmental change in which organisations operate in underdeveloped economies such as that of Zimbabwe.

In a volatile business environment such as Zimbabwe, businesses need to innovate and survive, to adapt and develop. For more than four decades the works of Burns and Stalker have offered a framework for businesses to achieve this. The notion that organisational design depends on the environment has guided the contingency thinking based on the finding of Burns and Stalker. With the growing technology and other forces at play, the environment has become more complex than that of Burns and Stalker's time. This calls for a development of a new framework of organisation and development for businesses. Works building on Burns and Stalker's framework are intended to pave the way for a more recent multiple continua model that explains the effects of the complex environment on organisational design. Such a call was made as far back as 1982 by Hull and Hage (1982). To our knowledge such a call has not received scholarly attention.

Burns and Stalker's work was qualitative in nature and that limited the applicability of their findings in certain ways. One noticeable limitation that is generally associated with quantitative studies is the problem of generalisation of knowledge produced (Bryman & Bell 2011; Yin 2004). Burns and Stalker's study was conducted on 66 electronic firms in Britain and Scotland five decades ago and might not be generalisable in contemporary economies, and most particularly in an extremely unstable and volatile operating environment like that of Zimbabwe. This methodological limitation coupled with environmental dynamics provided motivation for the present study. The study is aimed at extending the scholarship of Burns and Stalker by using a quantitative research strategy (Bryman & Bell 2011; Creswell 2014; Yin 2004) within the context of an underdeveloped economy. This is predicated on the strengths and ability of quantitative research findings to be generalised to other contexts beyond the primary research setting (Bryman & Bell 2011; Cresswell 2014). Furthermore, this study, unlike that of Burns and Stalker, cut across different firms in the manufacturing sector and, more importantly, investigated independent variables beyond market and technological factors to include socioeconomic, political and macroeconomic factors. The problems of contextualisation and limitations associated with Burns and Stalker's study as articulated in the preceding section has led to the following operational research question: considering Zimbabwe's volatile socioeconomic and political operating environment, can the same conclusion by Burns and Stalker regarding the relationship between organic structure and unstable operating environment be arrived at? This is the autopsy that guides this article. Using a quantitative research strategy, it is envisaged that this article would incrementally extend the scholarship of Burns and Stalker on the relationship between organisational structure and unstable operating environments.

Location of Burns and Stalker's ideas in management and organisational fields

The works of Burns and Stalker have far-reaching influence in both management and organisational fields. Textbooks and journal articles are awash with different presentations and interpretations of Burns and Stalker's ideas. Mainstream textbooks that have presented Burn and Stalker's ideas

include *Organisational Theory and Design* (Daft 2001), *Organisational Behaviour* (Robbins 2003) and *Management and Organisational Behaviour* (Mullins 2005).

Daft (2001) presented Burns and Stalker's ideas as an option between two alternative structures: mechanistic and organic to fit either stable or volatile environments. Robbins (2003) and Mullins (2005) echoed the same sentiments as Daft and concluded that Burns and Stalker's ideas are a framework to guide organisations and management practice in the two alternative environments. It is interesting to note that the environments are either stable or volatile and no suggestion is made of a moderate environment. The mainstream textbook presentation of Burns and Stalker lacks insights into the relations among structure, human agency and environment. It is in this vein that this article considers structural variables that have elements of human agency: complexity, formalisation and centralisation (employee involvement, attitudes and participation, etc.). A handful of textbooks has, however, seen the works of Burns and Stalker beyond compatibility between structure and the environment. Pugh and Hickson (1976) considered the complications of switching from a mechanic structure to an organic one.

The scholarship of Burns and Stalker as presented by leading journal articles over the last 50 years (*Human Relations*, *Administrative Science Quarterly* and *Journal of Management Science*) is not different from the mainstream textbooks. It gives a formulaic outline of Burns and Stalker's ideas and concludes that the theory is conceptually straightforward (Lawrence & Lorsch 1967). Contemporary scholars such as Lewin and Volberda (2003) have upheld these interpretations of Burns and Stalker's ideas.

Burns and Stalker's works: Theoretical foundations

To contextualise and consolidate the conceptualisation of Burns and Stalker's ideas, we discuss the theoretical foundations of their ideas. We consider the prevailing thoughts and approaches to management and organisational fields, the parameters that determined their rapidly changing and stable environments and the broader external environments that influenced their ideas.

The works of Burns and Stalker emanated from sociological perspectives. Sociologists concluded that members of a firm retain latent social identities that are different from the rational needs of the firm. The rational needs of a firm include relational networks (Miner 2016). This approach acknowledges the complications of including and determining the influence of human agency in organisational structures. Contemporary management and organisational theory attempts to match societal and organisational identities to achieve organisational goals (Clark 2001). This is the approach we take in this article.

The external environment of Burns and Stalker was influenced by the shift of postwar policies in Britain and Scotland. The change from government protection to a free market resulted in new management practices to make firms competitive. The rapid changes in the environment that underpinned Burns and Stalker's ideas were therefore influenced by postwar policies. Furthermore, the concept of rapid changes in the environment was at industrial level rather than macro level. The technological changes in the electronic firm accelerated the pace of change in Burns and Stalker's formation (Clark 2001). On the other hand, in the Zimbabwean context, the environmental changes were hyper in nature and beyond industrial level. The theoretical foundations of Burns and Stalker's ideas were therefore not driven by the hyper instability faced by firms in Zimbabwe.

Beyond how to structure organisations in a rapidly changing environment as embodied in Burns and Stalker's ideas, there is a lack of a theoretical framework on how firms can structure themselves in a hyper unstable situation. By considering Burns and Stalker's ideas in an environment like Zimbabwe, we hope to inspire a theoretical framework that informs practice on how to organise in a hyper unstable environment.

Conceptualisation of organisational structure and structural variables

The body of knowledge underlining what organisational structure is has originated differently. Theoretical studies of Weber (1947; Weber, Roth & Wittich 1978) and Urwick (1956) conceptualised organisational structure from a bureaucratic perspective. Such an approach was criticised for its lack of empirical support; it thus remains a conceptual model (Meier & O'Toole 2006). Furthermore, Weber's and Urwick's theoretical concepts also failed to consider important informal organisational elements such as human relations, leadership, communication networks and motivation (Hummel 2007). In order to remedy the pitfalls of the bureaucratic school of thoughts as represented by Weber and Urwick, the functionalist movement adopted the case study approach which provided empirical evidence to establish organisational structure within the context of contingency theory (Clegg, Kornberger & Pitsi 2005). The functionalist perspective is identified with the works of Blau (1970), Woodward (1980) and the Aston Group (Pugh & Hickson 1976). The work of the functionalist group focused preliminarily on organisational process rather than the structural characteristics of organisations themselves. However, notwithstanding the empirical establishment of organisational structure by the functionalist movement, their efforts also suffered from lack of external validity, which is often associated with case study research (Yin 2004).

The theoretical importance of organisational structure is predicated on its ability to deal with uncertainties and rapid changes that pervade the operating environments. These dynamics are conceptualised within the precinct of contingency theory. It has been argued that 'contingency is something that managers cannot avoid' (Clegg et al. 2005:125). The contingency theory premises its argument on the notion that organisations are unable to structure themselves. The optimal way of organisational structuring can be determined

only by internal and external constraints (Tolbert & Hall 2015). Extant literature has therefore identified dominant organisational contingences as size, technologies and environment (Clegg et al. 2005). The central consideration by the contingency theorists revolve around the way in which organisational structure interacts with size, environments and technology and how each of these contingencies determine structural design (Jones 2010). The major contribution of the contingency theorists to organisational theory is the establishment of causal relationships between organisational structure, size, environments and technologies. Robbins et al. (2011) describe structure by its key functions and variables. Complexity is one of the variables identified and described by Robbins et al. (2011) as the amount of vertical, horizontal and spatial differentiation that is present in an organisational structure. This differentiation facilitates effective control and coordination of organisational operations. It is therefore assumed that the ability of an organisation to deal with rapid environmental changes is contingent upon the complex nature or composition of its structures.

Formalisation is another variable identified by Robbins et al. (2011). This variable demonstrates the extent to which rules and procedures are applied in an organisation. The degree or rigidity of formalities in an organisation is capable of enhancing the level of structural complexity. Similarly, centralisation is a functional variable that determines the locus of authority where decision-making power resides in an organisation. The last structural variable identified by Robbins et al. (2011) is functional specialisation which is defined 'as the concentration of the types of tasks assigned to any one founding team member' (Sine et al. 2006:124). This personnel function describes the extent to which individual employees concentrate their efforts on the performance of various sets of tasks that have been assigned to them by the organisation (Dalton et al. 1980). In summary, these structural variables as described in the foregoing literature represent organisational structure properties that one would normally expect to find in any population of organisations (Clegg et al. 2005). However, the structures are most often distributed differently from one organisation to the next.

Other authors are consistent with Robbins's (2005) categorisation and definition of organisational structural variables. The earlier works of Dalton et al. (1980) categorised organisational structural variables into two as 'structural' and 'structuring'. Structural variables include physical attributes such as size and span of control. Structuring variables are policies and activities occurring within an organisation that prescribe guidelines for the behaviour of members. These structuring variables include formalisation, complexity, specialisation and centralisation. Fink, Jenks and Willits (1983) are also consistent with Robbins's idea of what structure is. All the authors expand the definition of structure by proposing two fundamental processes which they refer to as 'differentiation' and 'integration'. Differentiation, according to Fink et al., refers to the process of breaking down the task into sub-tasks, while integration is concerned with how a business coordinates its operations along functional divisions.

Theoretical framework

This article is conceptualised within the framework of three distinct organisational theories which will be discussed in the following section. The theories are classic organisation theory, neoclassical organisational theory and contingency theory.

Weber's (1947) bureaucratic model provided the core grounding for the development of the classical theory. Weber's model is premised on a work system that is firmly organised on an established bureaucratic task structure using chains of command. Managerial duties are organised on a functional line such as planning, organising, staffing and controlling. Each functional department is headed by a manager to whom other line employees report. This, according to Weber, is the best way for large organisations to achieve efficiency. Organisational structure under the classical theory is mechanistic in line with Burns and Stalker's classification (Jones 2010). Central to the neoclassic theory are the people who perform the tasks, hence the human relations approach. This approach, unlike the traditional bureaucratic structure, considers the input and importance of employees in achieving organisational efficiency. Organisational structure viewed through the neoclassic lens is a social system which is organic in nature (Harper 2015).

From the contingency approach, organisational structure is a function of the situation and prevailing environment. This approach is dominated by the work of Burns and Stalker (1961), who proposed that mechanistic structures are well suited for stable environments and organic structures for unstable environments. The applicability of the organic structure as proposed by Burns and Stalker has been confirmed by numerous studies (e.g. Aiken, Bacharach & French 1980; Hull & Hage 1982), which reported that large and well established organisations operating in dynamic environments perform better with a more organic structure (Sine et al. 2006). However, this proposition, according to Sine et al. (2006), failed to hold for new venture firms.

It is imperative to emphasise that studies that had provided empirical evidence in support of Burns and Stalker's propositions (e.g., Aiken et al. 1980; Hull & Hage 1982; Sine et al. 2006) were conducted many years back. The factors that define external environment have since changed in pace, nature and scope, given the dynamic political, economic, social and technological drivers. To our knowledge, no contemporary research has updated the propositions of Burns and Stalker in the context of prevailing external business environments.

Presenting Burns and Stalker's propositions

Burns and Stalker (1961) identified three structural variables responsible for the functioning of both mechanistic and organic structures: complexity, centralisation and formalisation. These structural variables are presented and discussed together with the respective propositions that were derived by Burns and Stalker.

Complexity

Complexity refers to the number of activities or subsystems within the organisation. These activities are represented in the number of functions (e.g. occupations or specialties) that are performed in an organisation (Daft 2013; Griffin & Moorhead 2014; Wang & Tai 2003). Consequently, Daft (1992) and Anderson (1999) identify three measures of complexity that are operationalised within the organisational context as vertical differentiation, horizontal differentiation and spatial differentiation.

The level of authority in organisations is depicted using vertical differentiation in a hierarchical form (Stacy & Mowles 2016). A higher order ranking indicates the level of authority an individual occupies in an organisation, and also shows the direction in which such authority flows. This hierarchical arrangement is sometimes referred to as organisational chart or organogram. A vertically differentiated organisational structure positions the chief executive officer (CEO) at the pinnacle of the chart (Stacy & Mowles 2016). This is followed by other offices or positions in order of seniority down to the lowest ranked manager (mostly line or operational heads). Authority is equally expected to flow from top to bottom along the same order, with strategic decisions formulated at the top (management) and passed down the hierarchy to operational managers for implementation. However, Hodge and Anthony (1988) warned that an organisation with more hierarchical levels is likely to experience coordination and integration problems. Hodge and Anthony's warning is important when designing a vertical organisational structure.

On the other side of vertical organisational structure is horizontal differentiation. This form of differentiation is organised along job title, occupation or the nature of the task performed (Daft 2013; Griffin & Moorhead 2014; Jones 2010). It is therefore common to see functional departments such as marketing, engineering, production, administration and others in large organisations with individual managers as the head. We must mention here that, unlike in vertical differentiation, horizontal differentiation exhibits a parallel level of authority as no departmental manager is superior to another. The functional departments complement each other in order to achieve organisational efficiency. The degree of structural complexity depends on the multiplicity of different occupations within the organisation that require specialised knowledge and skills (Harper 2015; McQuaid 2010).

The last structural variable identified by Burns and Stalker is spatial differentiation. This has been described as the degree of geographical dispersion experienced by an organisation (Mohrman 2007). It is a common operational strategy for large and multinational organisations to establish branches of their offices or operations in several locations both locally and internationally (Daft 2013; Griffin & Moorhead 2014; Wang & Tai 2003). For example, while the organisation Coca-Cola has its headquarters located in Atlanta, Georgia (United States [US]), it has various offices located across the US and in several countries in the world. Spatial differentiation is measured by the number of separate locations, the average distance of these sites from headquarters and the proportion of the organisation's personnel located at these separate units (Wang & Tai 2003).

Burns and Stalker (1961) concluded that organic structures have a high level of complexity and this enhances the ability of organisations to adapt effectively to change. This conclusion has found empirical support in Fabac (2010) and Robbins (1987), who affirmed the enhancing role of complexity in organisational adaptation.

Consistent with the foregoing literature, Burns and Stalker proposed that:

Proposition 1: In an unstable environment, organisations adopt high levels of complexity as compared to a stable environment.

Centralisation

Managers at different levels of authority assume responsibility for exercising decision-making powers in accordance with their positions within the organisational hierarchy. In some organisations, decisions are concentrated at the centre (e.g. headquarters), while in others power is devolved (decentralised) across all levels of authority (Scattolini 2009). Centralisation thus depicts the way decision-making power is distributed in relation to resource allocation within an organisation (Daft 2013; Griffin & Moorhead 2014; Tsai 2002). The practice in some organisations is to allocate power to only a few individuals occupying certain job categories, while others allow much wider participation (Harper 2015). Hage (1965) proposed the following measurement of centralisation, which has been adopted by contemporary researchers such as Pertusa-Ortega, Zaragoza-Saez and Claver-Cortes (2010) and Willem and Buelens (2009):

> Centralization or authority or hierarchy is measured by the proportion of occupation or jobs whose occupants participate in decision making and the number of areas which they participate. The lower the proportion of occupations or jobs whose occupants participate and the fewer the decision areas in which they participate the more centralized is the organization. (pp. 294–295)

In Burns and Stalker's formation, an organic structure should be less centralised in order to allow an organisation to manage unstable operating environments. Such a proposition has received much attention among organisational and management scholars. Siggelkow and Levinthal (2003) support this notion in relationship to adaptation and exploration.

Drawing from the above discussion, Burns and Stalker argued that:

Proposition 2: In an unstable environment, organisations adopt a less centralised organisational structure compared to a stable environment.

Formalisation

Contemporary organisations are managed through established operational procedures, rules, regulations and policies. These administrative procedures are fully documented and the

extent of such documentation defines the intensity of formalisation in the organisation (Daft 2013; Griffin & Moorhead 2014; Liao, Chuang & To 2011). Formalisation is often measured by simply considering the volume of administrative procedures that are established to guide behaviours and operations within the organisation. One of the widely acknowledged attributes of modern organisational structure is the extent to which tasks and functions are defined and formalised (Lindner & Wald 2011; Patel 2011). Task performance in highly formalised organisations is therefore defined and characterised by bureaucratic practices (Patel 2011). Such characterisation involves explicit job descriptions, high volume of organisational rules and clearly defined procedures regarding work processes (Jones 2010). To this extent, a job incumbent exercises a limited amount of discretion in terms of job descriptions and the modality for its accomplishment (Daft 2013; Griffin & Moorhead 2014; Patel 2011). In other words, what is to be done, when it is to be done and how it should be done are prescribed in the rules and procedure document and all that is required of a job incumbent is to act strictly according to the rules and procedure. Such regimented behaviour does not enable employees to exercise any form of work autonomy or innovation.

In a bureaucratic or highly formalised organisation, tasks are performed using the same input and method, thus achieving a consistent and uniform output (Liao et al. 2011). On the other side is a less formalised organisation where employees' behaviour and task processes are less programmed, with relatively low rigidity (Pertusa-Ortega et al. 2010). Apart from enhancing task autonomy and innovation, such a flexible work process assists organisations in adopting a contingency management strategy in an unstable operating environment, thus providing the basis for an organic structure (Burns & Stalker 1961; Wilden et al. 2013).

Burns and Stalker (1961) argued that in a dynamic environment, high formalisation decreases organisational adaptability to environmental changes and increases the risk of organisational failure. On the other hand, the organic organisation emphasises role flexibility (Burns & Stalker 1961). Several empirical studies (e.g. Willem & Buelens 2009) have provided support regarding the relationship between formalisation and firm performance in dynamic environments.

On the basis of the above documented evidence, Burns and Stalker further proposed that:

Proposition 3: *In an unstable environment, organisations adopt a less formalised organisational structure As compared to a stable environment.*

External (macro) environment as an independent variable

The efficiency of firms is largely dependent on the business environment in which they exist (Morgan 2007). Research concludes that among the key determinants of a business's performance is its external environment (Luthans 2011). Along that line, the contingency theorists have assigned external environment the role of an independent variable in research (Burns & Stalker 1961; Luthans 2011; Mintzberg 1979; Morgan 2007).

Business environment is a very common independent variable in management and organisational studies (Fabac 2010). The nature and characteristics of business environments are defined by several environmental dimensions that include technological changes, demographic issues, economics, complexity and political issues (Gibson & Birkinshaw 2004). These determinants of the environment render it either stable or unstable (Fabac 2010). The stability of an environment is dictated by the pace of changes of the environmental dimensions. If the pace of change is moderate, the external environment is said to be stable. If the pace of change is volatile and rapid in nature, the external environment is envisaged to be unstable (Burns & Stalker 1961). In stable external environments, businesses are able to plan and execute their operations within clearly defined parameters. On the other hand, in unstable environments, it is difficult to plan and operations are distorted. It is in this vein that businesses should organise themselves to be able handle any prevailing business external environment.

Even as a common independent variable in management and organisational circles, the measurement of external business environment has encountered major methodological challenges that may have generated biased estimates or account of issues such as errors in variables and endogeneity of regression. This article focuses on country level analysis of the external environment.

In determining the independent variables that constitute the business environment, this article adopted PEST analysis – that is, political, economic, social and technological. The acronym was developed from Aguilar's (1967) taxonomy of the environment – 'ETPS', that is economic, technical, political and social. Later in the 1980s, a number of scholars, for example Fahey and Narayanan (1989) and Morrison and Mecca (1989), extended Aguilar's taxonomy to include the variables environment and legislation in order to extend the acronym to PESTLE. For this research, only PEST variables will be considered.

Methods

Research strategy

This article employed a quantitative research strategy in order to enhance objectivity of data and the prospect of generalising research findings (Blanche, Durrheim & Painter 2006; Cresswell 2014).

Participants

The study participants comprised 325 managers of manufacturing companies who were drawn from Zimbabwe's Business Directory's database. To select the managers from the selected firms, the study used convenience sampling. The

convenience was the availability of email addresses of managers in Zimbabwe's Business Directory's database; hence, all managers whose email address was found in the directory and whose business fell in the manufacturing category were part of the study. Questionnaires in Google Forms were emailed to the participants who had to complete and submit the form. Organisational managers possess a good understanding of the firm-level attributes (Gibson & Birkinshaw 2004; Young 2009) that constitute the variables of investigation in this study.

Measuring instrument

Organisational structure variables

Formalisation was measured using the six items, on a five-point Likert scale adapted from Robbins's Measures of Organisational Structure Scale (Robbins 1987) which was previously used by Salgado (2005): (1) very low, (2) low, (3) average, (4) high and (5) very high. Items measuring formalisation are shown in Table 1.

Centralisation was measured using seven items on the five-point Likert scale Measures of Organisational Structure developed by Pennings (1973). The scale was further developed by Sathe (1978) and used by Walton (1981). Items measuring centralisation are shown in Table 2.

Complexity was measured using a scale developed by Pugh et al. (1963). The scale consists of seven items measured on a five-point Likert scale: (1) being very low, (2) low, (3) average, (4) high and (5) very high. The scale was used by Bresser and Dunbar (1986). Items measuring complexity are shown in Table 3.

Business environment variables

The business environment variables were measured using a PEST questionnaire adopted from Morrison and Mecca (1989) with a total of 19 items. All the items used a five-point Likert scale in which (5) was the most volatile and (1) the most stable.

The political variable had five items. Examples of items measuring the political variable are shown in Table 4.

The economic variable had five items. Examples of questions measuring the economic variable are shown in Table 5.

TABLE 1: Examples of questions on formalisation.

Item	Example
F1	Where written job descriptions exist, how closely are employees supervised to ensure compliance with standards set in the job description?
F2	How much latitude are employees allowed from the standards?
F3	How many non-managerial employees are given written operating instructions or procedures for their jobs? (Please consider 1–10 very low, 11–20 low, 21–30 average, 31–40 high, 41 and above very high.)
F4	To what extent do non-managerial employees follow given written instructions or procedures?
F5	To what extent are supervisors and middle level managers free from rules, procedures and policies when they make decisions?
F6	What percentage of all rules and procedures that exist within the organisation are in writing?

F, formulation.

The social variable had five items. Examples of the social variable are shown in Table 6.

The technological variable had four items. Examples of items measuring the technological variable are shown in Table 7.

Data analysis

To establish a relationship among the research variables, structural equation modelling (SEM), employing the linear structure relations (LISREL) model was used to fit the model of data. An important justification for the use of SEM is that it

TABLE 2: Examples of questions on centralisation.

Item	Example
C1	How much direct involvement does top management have in gathering the information they will use in making decisions?
C2	To what degree does top management participate in the interpretation of the information input?
C3	To what degree does top management directly control execution of the decision?
C4	How much discretion does the typical first-line supervisor have over establishing his or her unit's budget?
C5	How much discretion does the typical first-line supervisor have over determining how his or her unit's performance will be evaluated?
C6	How much discretion does the typical first-line supervisor have over hiring and firing personnel?
C7	How much discretion does the typical first-line supervisor have over personnel rewards (i.e. salary increases, promotions)?

C, centralisation.

TABLE 3: Examples of questions on complexity.

Item	Example
CP1	How many different job titles are there?
CP2	What proportion of employees hold advanced degrees or have many years of specialised training?
CP3	How many vertical levels separate the chief executive from those employees working on output in the deepest single division?
CP4	How many business units are in your organisation? (Please consider 1–3 as very low, 4–6 low, 7–10 average, 11–15 high and beyond 15 very high.)
CP5	What is the mean number of levels for the organisation as a whole? (Please consider 1–2 as very low, 3–4 low, 5–6 low, 7–8 average, 9–10 high, above 10 very high)
CP6	What is the number of separate geographic locations where organisation members are employed? (Please consider 1–2 very low, 3–5 low, 6–15 average,16–30 high, above 30 very high.)
CP7	What is the average distance of these separate units from the organisation's headquarters? (Please consider less than 10 km very low, 11 km – 50 km low, 51 km – 100 km average, 101 km – 300 km high, above 300 km very high.)

CP, complexity.

TABLE 4: Examples of questions measuring the political variable.

Item	Example
P1	To what extent does the government interfere in the business environment?
P2	What is the level of corruption and organised crime?
P3	How do you rank the political stability?
P4	What is the level of government involvement in private corporate policy?
P5	What is the stability of investment laws?

P, political variable.

TABLE 5: Examples of questions measuring the economic variable.

Item	Example
E1	How do you rank economic growth?
E2	How do you rank the positive impact of monetary policy, exchange and interest rates?
E3	How would you rate inflation?
E4	How do you rate unemployment?

E, economic variable.

TABLE 6: Examples of the social variable items.

Item	Example
S1	How do you rank population growth?
S2	How would you rank the impact of mobility/migration on your business?
S3	How do generational shifts affect your business?
S4	What are the effects of religious beliefs?
S5	What is the level of education in the country?

S, social variable.

TABLE 7: Examples of questions measuring the technological variable.

Item	Example
T1	How do you rate technological research and development?
T2	How automated is the business environment?
T3	What is the rate of technological change?

T, technical variable.

allows for easy analysis of the relationships between latent variables (Marsh, Hau & Wen 2004). Structural equation modelling also allows for accurate analysis of the dependencies of constructs without measurement errors. As a statistical tool, current SEM software integrates many standard methods such as correlation and multiple regressions.

Ethical considerations

Consent forms signed by the participants were obtained and an Ethical clearance certificate was issued by University of the Witwatersrand Research Committee: H16/02/32.

Results

Of the 350 Google Forms sent to the participants, 189 were completed and submitted, which translates into a 54% response rate. Babbie, Mouton, Vorster & Prozesky (2001) concluded that a 50% response rate in the social sciences is good, 60% very good and 70% excellent. Saunders, Lewis & Thornhill (2009) also consider a response rate of above 50% in the social sciences to be adequate for data analysis. Given that a response rate of 54% was recorded in this research, it was considered adequate for analysis of the results.

Reliability

All the variables recorded reliability scores above 0.70 on the Cronbach's alpha scale, as recommended by Nunnally (1967). The seven items measuring centralisation recorded a reliability score of 0.83, the seven items measuring complexity recorded a combined reliability value of 0.78 and the six items measuring formalisation recorded a score of 0.82. The 19 items measuring the environment variable had a combined score of 0.74. It was therefore concluded that the instrument was reliable for the research and likely to produce reliable results.

Results of independent variables

Measured on a Likert scale of 1–5 (1 being stable and 5 most volatile), the descriptive statistics showed a highly unstable political and economic environment with a mean of 4.5, a standard deviation of 0.45 and a variance of 0.39. Social factors were fairly volatile with a mean of 3.1, standard deviation of 1.0 and a variance of 1.209. Technological factors were the least volatile with a mean of 2.222, a standard deviation of 0.988 and a variance of 0.978.

In summary, the results showed that business operating environment in Zimbabwe was highly unstable. Political and economic factors are the major contributors to the volatility business scenario in Zimbabwe. The moderate social and technological factors are not enough to mitigate the volatile nature of the overall business operating environment in Zimbabwe.

Results of dependent variables

Using measurement on a Likert scale of 1–5, centralisation showed an above average mean of 4.2, a standard deviation of 2.41 and a variance of 3.17. Formalisation reported a moderate mean of 3.12, a standard deviation of 1.63 and a variance of 2.43. Complexity also demonstrated an above average mean of 3.90, a standard deviation of 1.91 and a variance of 3.40.

Given the results of the descriptive statistics, organisations operating in Zimbabwe still adopt a significant level of centralisation and moderate and considerable levels of both formalisation and complexity.

Goodness of fit statistics

Table 8 represents the goodness of fit statistics. The degrees of freedom were recorded at 41. The minimum fit function chi-square is 63.53 (p = 0.014), the normal theory weighted least square chi-square is 58.05 (p = 0.0041). The estimated non-centrality parameter (NCP) was recorded at 17.05 with a 90% confidence interval of 0.80. The population discrepancy function value was recorded at 0.21 with a 90% confidence interval at 0.0096, 0.5. The entire statistic reported on the chi-square index was acceptable, in agreement with the guidelines of the ranges being as high as 5.0 (Wheaton, Muthen, Alwin & Summers 1977) to as low as 2.0 (Tabachnick & Fidell 2007). The root mean square error of approximation (RMSEA) was recorded at 0.071. The adjusted goodness of fit index (GFI) is 0.82. It has been argued that an RMSEA of between 0.08 and 0.10 provides a mediocre fit and that below 0.08 shows a good fit (MacCallum, Browne & Sugawara 1996). Therefore, the recorded RMSEA of 0.078 is acceptable. The GFI was recorded at 0.89. Previously a cut-off point of 0.90 was recommended for the GFI; however, simulation studies have shown that when factor loadings and sample sizes are low, a higher cut-off of 0.95 is more appropriate (Miles & Shevlin 2007). In light of this, the GFI was acceptable. The root mean square residual (RMR) and standardised root mean square residual (SRMR) of 0.12 and 0.11 were recorded. Values for the SRMR range from 0 to 1.0, with well-fitting models obtaining values less than 0.5 (Byrne 1998; Diamantopoulos & Siguaw 2000); however, values as high as 0.8 are deemed acceptable (Hu & Bentler 1999). Thus the SRMR value of 0.11 is acceptable. The non-normed-fit index (NNFI) was recorded at 0.83. Values for this statistic range between 0 and 1, with Bentler and Bonnett (1980) recommending values greater than 0.80 as indicating a good fit. In the past two decades suggestions have been made that

TABLE 8: Goodness of fit statistics.

Measurement variable	Value	90% Confidence interval	*p*-value
Degrees of freedom	41	-	-
Minimum fit function chi-square	63.53	-	0.014
Normal theory weighted least squares chi-square	58.05	-	0.041
Estimated non-centrality parameter (NCP)	17.05	-	-
90% confidence interval for NCP	-	0.80; 41.30	-
Minimum fit function value	0.77	-	-
Population discrepancy function value (F0)	0.21	-	-
90% confidence interval for F0	-	0.0096; 0.50	-
Root mean square error of approximation (RMSEA)	0.071	-	-
90% confidence interval for RMSEA	-	0.015; 0.11	-
p-value for test of close fit (RMSEA < 0.05)	0.21	-	-
Expected cross-validation index (ECVI)	1.30	-	-
90% confidence interval for ECVI	-	1.11; 1.59	-
ECVI for saturated model	1.59	-	-
ECVI for independence model	3.08	-	-
Chi-square for independence model with 55 degrees of freedom	233.93	-	-
Independence Akaike information criterion (AIC)	255.93	-	-
Model AIC	108.05	-	-
Saturated AIC	132.00	-	-
Independence competitive analysis by independent comparison (CAIC)	293.67	-	-
Model CAIC	193.82	-	-
Saturated CAIC	358.43	-	-
Normed fit index (NFI)	0.73	-	-
Non-normed fit index (NNFI)	0.83	-	-
Parsimony normed fit index (PNFI)	0.54	-	-
Comparative fit index (CFI)	0.87	-	-
Incremental fit index (IFI)	0.88	-	-
Relative fit index (RFI)	0.64	-	-
Critical N (CN)	85.86	-	-
Root mean square residual (RMR)	0.12	-	-
Standardised RMR	0.11	-	-
Goodness of fit index (GFI)	0.89	-	-
Adjusted goodness of fit index (AGFI)	0.82	-	-
Parsimony goodness of fit index (PGFI)	0.55	-	-

the cut-off criterion should be NNFI ≥ 0.95 (Hu & Bentler 1999). The comparative fit index (CFI) was recorded at 0.87. This is one of the most popularly used fit indices, as it is one of the measures least affected by sample size (Fan et al. 1999). For this, a value of CFI ≥ 0.95 is presently recognised as indicative of good fit (Hu & Bentler 1999).

Most of the fitness statistics confirmed that the measurement model of the relationship between business environment and the three organisational structure variables of centralisation, complexity and formalisation was fit for the purpose.

Relationships between variables

The propositions about the relationships between the variables presented above are discussed here. The assessments of the relationships are based on the *t*-values presented in Table 9, the beta and gamma matrices.

Proposition 1: In an unstable environment, organisations adopt high levels of complexity compared to a stable environment.

From the gamma matrix, the causal path between environment ξ (exogenous latent variable) and complexity η (endogenous latent variable) is linked by the *t*-value of 1.60 with a standard error of 0.06 (see Table 9). The *t*-value is below the cut-off point of T ≥ 1.96 *p* (0.05) recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between unstable environment and high levels of complexity. The proposed relationship between the two variables could not be supported.

TABLE 9: The gamma matrix.

Endogenous latent variables	Environment		
	Endogenous latent variable	Standard error	*t-value*
Complexity	0.09	(0.06)	1.60
Centralisation	0.07	(0.06)	1.40
Formalisation	0.76	(0.52)	1.42

Proposition 2: In an unstable environment, organisations adopt a less centralised organisational structure compared to a stable environment.

From the gamma matrix, the causal path between the environment ξ (exogenous latent variable) and centralisation *η* (endogenous latent variable) is linked by the *t*-value of 1.40 with a standard error of 0.06 (see Table 9). The *t*-value is below the cut-off point of T ≥ 1.96 *p* (0.05) recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between environment and centralisation. The proposed relationship between the two variables could not be supported.

Proposition 3: In an unstable environment, organisations adopt a less formalised organisational structure compared to a stable environment.

From the gamma matrix, the causal path between environment ξ (exogenous latent variable) and formalisation η (endogenous latent variable) is linked by the *t*-value of 1.42 with a standard error of 0.052 (see Table 9). The *t*-value is below the cut-off point of T ≥ 1.96 *p* (0.05) recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between the environment and formalisation. The proposed relationship between the two variables could not be supported.

Discussion

The purpose of this article was to reconsider the propositions made by Burns and Stalker (1961) on how organisations should structure themselves in unstable environments. Burns and Stalker proposed that in unstable environments, organisations tend to adopt organic structures. The main properties of an organic structure as identified by the authors are low centralisation, high specialisation and high formalisation. The three propositions formulated by Burns and Stalker were empirically tested in this article.

This article considered the environment as the independent variable denoted by the four elements: political, economic, social and technological. The original works of Burns and Stalker considered the environment as a function of only two elements, that is, technological and marketing forces. It

was necessary for us to expand the independent variables used by Burns and Stalker in our study as a result of: (1) fundamentally different environmental contexts and (2) the rapidly changing socioeconomic environment between 1961 when the seminal work was conducted and the present. Moreover, it is our conviction in this article that the relationships between organisation structure and operating environment could be explained using more variables other than market and technology.

Our findings in this article were inconsistent with the original work of Burns and Stalker. The research setting of our study exudes a high propensity for instability which one could consider as conducive for the empirical testing of Burns and Stalker's organic structure proposition. However, business organisations in Zimbabwe do not seem to adopt an organic structure despite the unstable environment in which they operate. Consistent with our findings, Zimbabwean organisations adopt a hybrid structure that suggests a combination of both mechanistic and organic structures. We attempt to attribute this contrasting outcome partly to the methodological problem of case study of homogeneous electronic firms that was adopted by Burns and Stalker. This contrasts with our quantitative research strategy, using heterogeneous firms in the manufacturing sector which represents the largest business sector in Zimbabwe's economy. Research methods literature has consistently argued in favour of the prospect of generalisable outcomes in quantitative research (Bryman & Bell 2011) in comparison to qualitative research, and case study research design in particular. Similarly, while Burns and Stalker's work was conducted in an economically unstable environment in the UK, the drivers of operating instability in Zimbabwe fundamentally transcend what could be referred to as a 'normal' economic environment to include complex political, turbulent social and, most importantly, 'abnormal' economy.

Beyond methodological and environmental factors that we have described above, the expansion of independent variables employed by Burns and Stalker and our study further accounted for the variations in both studies. It is our submission in this article that the present study has succeeded in empirically establishing a novel dimension in the existing relationship between organisational structure versus operating environment. This dimension presents an important incremental theoretical and practical contribution to the prevailing body of knowledge in the broad field of strategic and change management.

Lastly, through this article, we have responded to a stream of scholars advocating for an empirical establishment of hybrid organisational structures in addressing the rapidly changing business operating environment (Battilana & Dorado 2010; Doherty, Haugh & Lyon 2014). We therefore, based on our finding in this article, recommend a managerial practice that embraces a hybrid structure, rather than concentrating solely on the adoption of an organic structure in a dynamic environment.

Conclusion

In a highly dynamic operating environment like the one currently seen in Zimbabwe, it is theoretically expected that organisations adopt Burns and Stalker's organistic structural postulation in order to achieve some degree of efficiency. However, it is our argument in this article that rather than the norm, organisations in Zimbabwe react and adapt to the hostile and unpredictable dynamics in the economy by opting for a hybrid structural adaptation mechanism. Furthermore, it is characteristic of organisations to hurriedly downsize their workforce when confronted with operational difficulties occasioned by rampant economic and sociopolitical uncertainties. The outcome of such unplanned downsizing is the high propensity of the organisation losing employees whose skills and expertise are critical in the formulation and implementation of a turnaround strategy. We consider such practice as a 'panic' reactionary instead of proactive and sustainable contingency approach in managing organisational change. Short-term adaptation strategy of this description could be more damaging to optimal organisational efficiency and ultimate survival in the long run.

Acknowledgements

The authors would like to acknowledge the African Leadership University, Rwanda, for their contribution to the publication fees.

Competing interests

The authors have declared that no competing interests exist.

Author's contributions

N.S. conceptualised the paper and performed data collection, analysis and discussions. O.M.S. provided theoretical grounding and coordinated compilation.

Funding information

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data availability statement

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

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