

Chapter 2

THE CONTINGENCY THEORY OF ORGANIZATIONAL DESIGN: CHALLENGES AND OPPORTUNITIES

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Abstract: Contingency theory presently provides a major framework for organizational design. There are, however, several major challenges to it. Contingency theory is said to be static. However, the SARFIT formulation of structural adaptation, with the Cartesian approach to fit, provides a theory of organizational change. Moreover, difficulties become opportunities for theory development, in the new concepts of quasi-fit and hetero-performance. The contingency theory of organizational structure is said to be obsolete because of new organizational forms, but this lacks credibility. A rival theory of organizational structure is institutional theory, however it is problematic. Challenges and opportunities in methodology are also discussed.

Key words: Contingency theory, fit, organization design.

1. INTRODUCTION

The contingency theory of organizational structure presently provides a major framework for the study of organizational design (Donaldson, 1995a, 2001). It holds that the most effective organizational structural design is where the structure fits the contingencies. There are, however, several major challenges to it. Some of these are theoretical, while some are empirical. This paper will assess some of these challenges and show that they are overstated. However, some challenges lead to innovations in theory. Other challenges are accompanied by innovations in method. Both these theoretical and methodological innovations constitute opportunities for the contingency

theory of organizational structure. In turn, they can feed into the study of organizational design.

This paper will discuss first some theoretical challenges to, and opportunities for, the contingency theory of organizational structure. It will then discuss the empirical and methodological challenges to, and opportunities for, the contingency theory of organizational structure.

2. THEORETICAL CHALLENGES AND OPPORTUNITIES

2.1 The challenge of organizational change

The contingency theory of organizational structure may be referred to more succinctly as structural contingency theory (Pfeffer, 1982). A challenge is that structural contingency theory is static and fails to deal with organizational change and adaptation (Galunic and Eisenhardt, 1994). It is true to say the heart of structural contingency theory is statics, in the sense that it deals with how a static state of fit between structure and contingency causes high performance (e.g., Woodward, 1965). However, structural contingency theory writings are within a functionalist tradition of social science (Merton, 1968) that sees organizations as adapting to their changing environments (Parsons, 1961). Therefore, organizations change from one fit to another over time.

More specifically, there is a process that has been articulated in the theoretical model of Structural Adaptation to Regain Fit (SARFIT) (Donaldson, 1987, 2001). An organization in fit enjoys higher performance, which generates surplus resources and leads to expansion (Hamilton and Shergill, 1992), such as growth in size, geographic extension, innovation or diversification. This increases the level of the contingency variables, such as size, leading to a misfit with the existing structure (see Figure 2.1). The misfit lowers performance, eventually leading to a performance crisis and adaptive structural change into fit (Chandler, 1962).

This SARFIT theory subsumes several seminal works in structural contingency theory, such as Chandler (1962) on divisionalization changes in response to changing strategies and Burns and Stalker (1961) on changes from mechanistic to organic structures in response to technological and market change in the environment. Thus, the structural contingency theory tradition has always contained ideas about dynamics and these are formulated in the SARFIT theory.

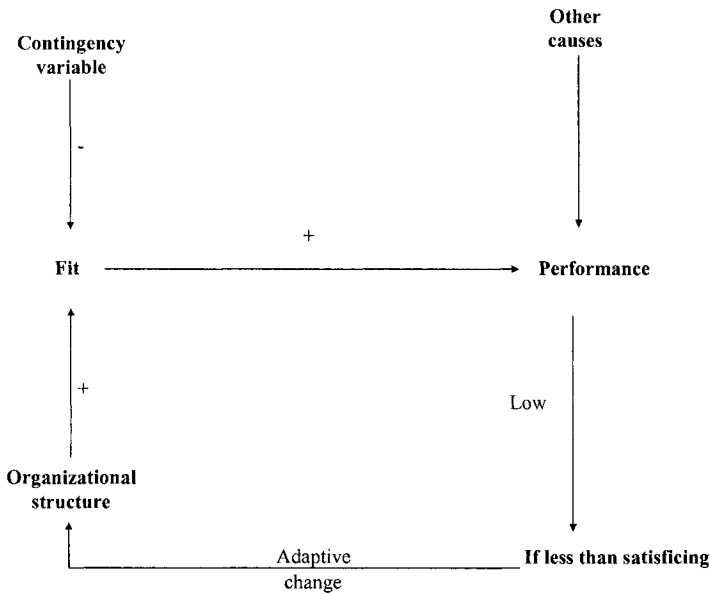


Figure 2.1. The Contingency Theory of Structural Adaptation to Regain Fit (SARFIT)

Structural contingency theory, like sociological functionalism more generally, is often considered as being an equilibrium theory, in that organizations are depicted as attaining fit and then being in equilibrium and so remaining static. However, SARFIT is a disequilibrium theory of organizations (Donaldson, 2001). In SARFIT an organization only remains in fit temporarily, until the surplus resources from the fit-based higher performance produce expansion. This increases contingency variables, such as size or diversification, leading the organization into misfit with its existing structure. Thus, in the SARFIT view, fit and misfit are each temporary states that alternate with each other. An organization in fit tends to expand into misfit, which provokes structural adaptation into fit, which then leads to further expansion into misfit. This cycle repeats itself over time. As the organization moves between fit and misfit so it has resultant higher and lower performance, respectively. Each phase of moving into misfit produces incremental increases in contingency (e.g., size). And each phase of moving into fit produces incremental increases in structure. Thereby, these increments accumulate over time and so tend to eventually produce growth from being a small, local and undiversified organization to being a larger, geographically widespread and diversified organization.

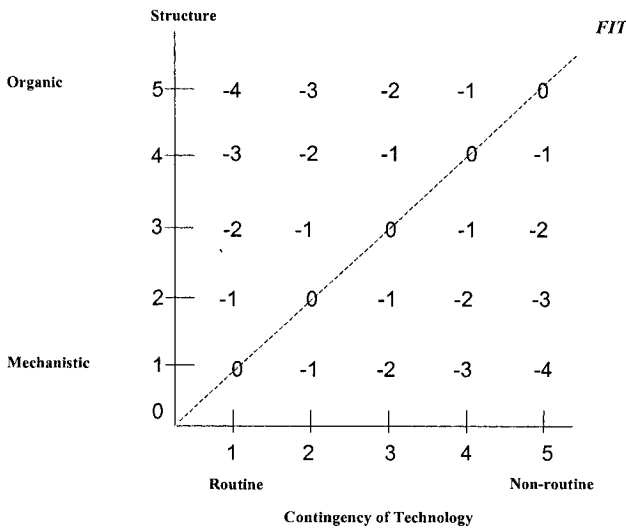


Figure 2.2. Iso-performance: Fit, Misfit and Performance

A modern variation of contingency theory is configuration theory, which states that the fit between contingency and structural (and other organizational) variables is limited to just a few configurations or gestalts, that is, fits (Miller, 1986). However, an alternative theoretical concept is Cartesianism (Donaldson, 2001), which holds that there are many fits, so that there is a continuous line of fits. Each level of a contingency variable is fitted by a level of the structural variable (see Figure 2.2). Hence, for example, whereas configurationalism argues that there are few fits between size and formalization, such as simple structure and machine bureaucracy (Miller, 1986), Cartesians holds that there are many (Child, 1975). Because fits lie along a continuous line (Child, 1975), they provide stepping-stones for organizational growth. An organization can readily move from one fit to an adjoining fit, thereby attaining high performance at each fit, and so giving it the extra resources needed for the next increment of contingency expansion. Thus the idea of a continuous fit line is consistent with the SARFIT model of repeated incremental changes in contingency and structure. Together, these theoretical ideas explain why organizations show frequent, incremental change (Donaldson, 1996) – rather than the infrequent quantum jumps postulated by configurationalism. Thus Cartesianism is part

of a coherent theory of organizational change. Empirical evidence supports Cartesianism, rather than configurationalism (Donaldson, 1996, 2001).

Critics of structural contingency theory sometimes argue that it is not sensible for organizations to move into fit with their contingencies, because while the organization is changing its structure to fit the contingencies, the contingencies themselves change, so that the organizational structural change does not produce fit. Nevertheless, by moving towards the fit, the organization is decreasing misfit, and thereby increasing its performance relative to what it would be if it were to make no structural change.

The organization may attain not full fit, but quasi-fit, that is, a structure that only partially fits the contingencies (see Figure 2.3) (Donaldson, 2001). Yet this may increase performance sufficient to produce some expansion in the contingencies. As seen in Figure 2.3, an organization that is in misfit by being below the fit line can follow a growth path of increasing its organizational size and structure by moving into quasi-fit, rather than full fit. For such an organization in misfit, it may increase its structure sufficiently to move up onto the quasi-fit line. This level of fit produces an increase in the performance of the organization, though less than would be produced if the organization had moved into full fit. Nevertheless, this quasi-fit produces a sufficient increase in performance that the organization has new surplus resources that allow it to grow. This increment of growth propels the organization forward into a new state of misfit, which again can be resolved by the organization increasing its structural level sufficient to attain move back onto the quasi-fit line. Thus quasi-fit can be sufficient to impel the cycle of incremental changes of SARFIT, which accumulate over time into substantial organizational growth in contingencies and structural variables.

It is sometimes also said against structural contingency theory that organizational managers may not know the fit states of the theory and so cannot change their organization towards it. However, the concept of quasi-fit allows that managers only need to move towards fit for misfit to be reduced and the SARFIT cycle to operate (Donaldson, 2001).

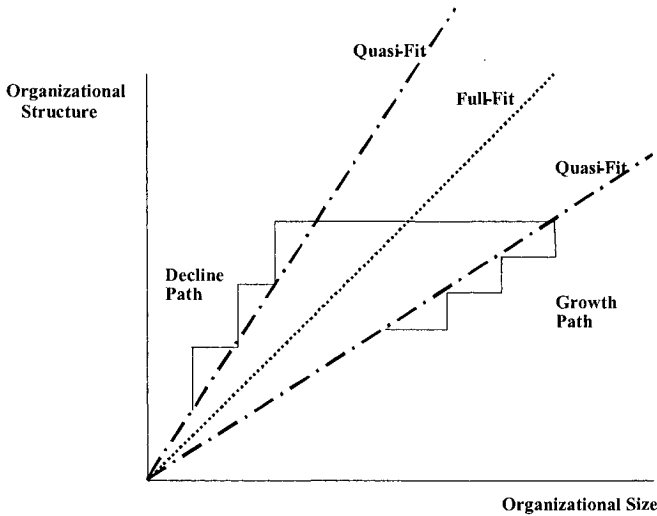


Figure 2.3. Lines of Quasi-Fit Showing Growth and Decline Paths

2.2 Hetero-performance

Structural contingency theory holds that organizations in fit have, as a result, higher performance than those in misfit. However, all these fits produce the same high level of performance. For instance, Woodward showed that organizations in fit to each of three levels of the technology contingency attained the same high level of performance. Van de Ven and Drazin (1985) talk about the fit line as being one of iso-performance, that is, equal performance of all the fit points on it (Figure 2.2). However, if each fit produces the same high performance, why would an organization move from one fit to another? Why do organizations change greatly, such as from being small and unformalized to being large and highly formalized if both those states are fits between size and formalization and so yield the same benefit? For movement along the fit line to be organizationally rational there must be some gain from it.

In contrast, hetero-performance theory (Donaldson, 2001) holds that fits to higher levels of the contingency produce higher performance than fits to lower levels of the contingency (see Figure 2.4). Thus, for the fit line of formalization to size, each successive fit produces higher performance than

the fit that precedes it. Thus, the fit of slightly greater formalization to slightly larger size produces higher performance than a fit of slightly lesser formalization to slightly smaller size. This also explains why an organization in misfit, with a contingency that is at too high a level to its existing structural level, moves into fit by adopting a greater structural level, rather than going back to its preceding contingency level.

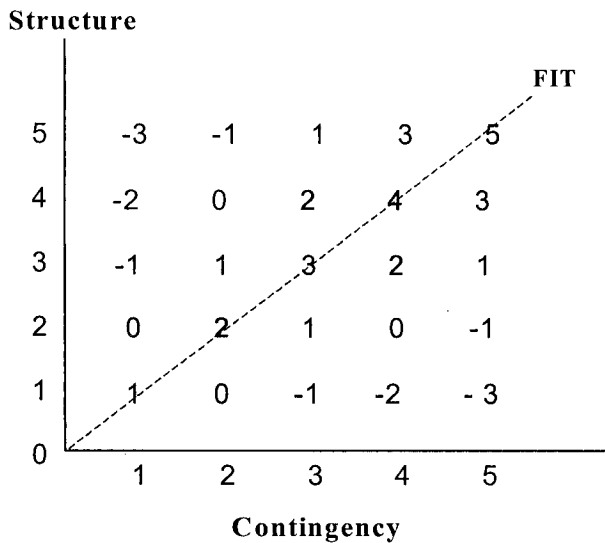


Figure 2.4. Hetero-Performance: Fit, Misfit and Performance

For example, empirically, organizations that have diversified and retained their functional structure that then misfits their strategy, regain fit by adopting a divisional structure that fits their diversified strategy, rather than just de-diversifying (or “downscoping”) to fit their existing functional structure (Donaldson, 1987). Thus, hetero-performance is consistent with observed tendencies of an organization to move to higher fits along the fit line, i.e., fits to higher levels of the contingency variable. This, in turn, explains how organizations grow, producing variations in size and structural variables. Hetero-performance is therefore consistent with the SARFIT theory of organizational change, because there is a gain to be had from moving along the fit line.

Researchers sometimes operationalize the effect of fit on performance by a multivariate interaction term of contingency (C) multiplied by structure (S), i.e., $C \times S$. Donaldson (2001) has shown that this is a poor operationalization of the traditional contingency fit concept of iso-performance (see below). However, the multivariate interaction term is a better operationalization of the newer concept of hetero-performance. Therefore, in empirical research, a positive correlation between the multivariate interaction term and performance should be cautiously seen as some preliminary evidence of a possible hetero-performance relationship.

Both iso-performance and hetero-performance may be valid in their own domains. Therefore it may be possible to create a new, more overarching theory by specifying what those domains are. There are reasons for believing that iso-performance holds for environmental contingencies, whereas hetero-performance holds for intra-organizational contingencies. Where fit is determined by the environmental contingencies, then this is outside the control of the managers of an organization. Therefore, they will shift their organization's structural design from, for example, mechanistic to organic, as the environment changes from stable to unstable, because they are forced to, to regain fit and performance. This is the case even though the mechanistic fit to the stable environment produces the same high performance as the organic fit to the unstable environment. Thus when the environment changes, the organization must change structure in order to avoid the performance loss from misfit, despite the new fit producing no better performance than the old fit. In contrast, if the contingency is an internal characteristic of the organization, then managers can control it, and so they will not change structures from one fit to another unless the new fit produces higher performance than the old fit, i.e., hetero-performance.

Thus, taken together, the challenges to structural contingency theory of being a supposedly static, equilibrium theory which fails to deal with organizational change or explain how managers can move into fit or why they move between fits, can be resolved by altering the theory to include the related theoretical innovations of SARFIT, disequilibrium, quasi-fit and hetero-performance. Developing these newer theoretical ideas and using them empirically constitutes an opportunity for future work in structural contingency theory within organizational design.

2.3 Contingency theory not obsolete

Another theoretical challenge to structural contingency theory is that the organizational structures featuring in contingency theory are obsolete and are being replaced by new organizational forms. This argument is in a long

line of declarations that some modern development, often technology, is rendering existing structures ineffectual or no longer required. Eccles and Nohria (1992) investigated organizations whose structures were touted as radically new forms and found them to be traditional structures described in dramatic language. Thus, the examples they could find were rhetorical not real.

A survey of many organizations in one country concludes that they are overwhelmingly continuing to use traditional macro-structures such as the divisional type, with innovations such as information technology or teams being incremental, not radical, changes within this broader traditional framework (Palmer and Dunford, 2002). Similarly, a study of organizations from many European countries found that organizations are not radically flattening their structures. The change across organizations can be calculated to be a mean annual reduction of only 0.3 of a hierarchical level (Whittington, Mayer and Curto, 1999). Again, there were also innovations such as email, but within the conventional macro-structures rather than replacing them (Whittington, Mayer and Curto, 1999).

While technology has been asserted to lead to less bureaucratic structures (Woodward, 1965), a subsequent analysis concludes that it actually leads to mild increases in bureaucratization (Caufield, 1989).

New developments in information technology are depicted as leading to radically new organizational structures, such as eliminating hierarchy. However, while email may facilitate information passing, it does not perform the functions of exercising authority. Again, information technology can speed data transmission and calculations. Yet very little of line managers' time is spent on data transmission and calculations (Mintzberg, 1973). Their time is spent more on synthesizing quantitative and qualitative information, exercising judgments and persuasion – not functions that computers can do. Moreover, while expert systems are replacing human judgment in decisions such as credit approval in banks, these are low uncertainty tasks, whereas much of managing is about uncertainty. Therefore, managers continue to be required even alongside the new information technologies. Each manager can only supervise a limited number of subordinate managers, i.e., a limited span of control. Therefore, hierarchies will remain, and will not become markedly flatter. Hierarchies will only radically flatten from information technology when the brain of a manager can be greatly augmented, perhaps through an attached computer, to create a computer-aided manager who can deal with a vastly enlarged span of control.

2.4 The challenge of institutional theory

Today perhaps the most popular organizational theory is institutional theory (e.g., Scott, 1995). This holds that organizations adapt to their institutional environment by adopting features that are considered legitimate in the wider institutional environment, thereby garnering support. This process may be without adopting characteristics that produce higher operational effectiveness (DiMaggio and Powell, 1991) and thus are different from the process of fitting the organization to the task contingencies in structural contingency theory. Thus the approach differs from structural contingency in stressing the symbolic more than the real, and in adaption as being to institutional norms rather than organizational task contingencies.

While institutional theory rejects explanations of structure as being required by organizational performance, it typically fails to study performance and so cannot show contingency theory explanations to be false. Thus many arguments of institutional theory remain as unproven assertions. Moreover, evidence from structural contingency theory research that structural changes are movements into fit that raise organizational performance (Donaldson, 1987), refutes institutional theory. Continuing research into structural fit and its performance consequences should establish further the limitations of the institutional theory view.

Institutional theory is a profoundly cynical view that fails to recognize that work organizations can produce real outcomes of value in an operational sense (Donaldson, 1995b). It also fails to accord sufficient strength to the argument that many organizations are under competitive pressure to improve their operational effectiveness. Moreover, institutional theory emphasizes institutional isomorphism, that is, organizations becoming more like their peers (DiMaggio and Powell, 1983). However, even some of the longitudinal evidence presented by institutional theory actually shows the opposite – organizations becoming over time more unlike (Meyer, Scott, Strang and Creighton, 1988; see Donaldson, 1995b, pp. 85-88). Again, Kraatz and Zajac (1992) have shown that many liberal arts colleges failed to copy higher status colleges, and, instead, differentiated their curriculum by increasing vocational subjects, out of financial necessity. Strategy theorists point out that differentiation can be a valuable strategy, which is dysisomorphism. Structural contingency theory research reveals considerable variation across organizations in structures, associated with contingencies, even for organizations in the same industry (e.g., Blau and Schoenherr, 1971), which contradicts the institutional theory of isomorphism to a common norm in an organizational field. Thus, institutional theory is considerably less theoretically cogent and less empirically valid than its

prominence implies. There is considerable merit to pursuing structural contingency theory, despite the challenge posed by intuitionist theory.

There is a need, alongside any institutionalist studies of effects on legitimacy, to study consequences for operational effectiveness, because it is possible that, while some structural features may have benefits that come from legitimacy, they may also have negative consequences for operational effectiveness because they misfit the task contingencies. Some latter-day institutional theorists cleave to the extreme view that there are no objective structural consequences beyond those in institutional theory, because all causal processes are social construction. Thus, institutional theory, on its own, is a poor framework for use in organizational design research. Moreover, institutional theory reports that managers follow the socially acceptable norms (Fligstein, 1985). Hence managers already know the knowledge produced by institutional theory research. Therefore, the “discoveries” of institutional theory research are not telling managers something they do not already know. Hence institutional theory research tends not to produce knowledge that will lead to organizational change and improvement.

3. EMPIRICAL AND METHODOLOGICAL CHALLENGES

At the heart of structural contingency theory is the relationship between misfit and performance. This provides the explanation of why organizations adopt the structures that they do and thereby produce the associations between structural and contingency variables. Thus, these hypothetical fits and misfits need to be refined and their performance benefits empirically proven. Moreover, clearly identifying such fits allows structural contingency research to offer valid prescriptive guidance to managers about what organizational designs they should adopt. Showing the strength of the effect of fit and misfit on performance allows managers to be properly apprised of the importance of making needed organizational design changes. Thus an on-going challenge is to show the empirical validity of these structural contingency fits. This involves issues of methodology. Developments in methodology offer opportunities that can assist structural contingency theory research. Moreover, one major methodological development, while creating an opportunity for contingency theory, also poses a challenge to contingency theory research. We will begin this section with a discussion of that opportunity and challenge, before turning to a discussion of the opportunities in other aspects of methodology.

3.1 Polynomial regression method

A technical development is the polynomial regression method (Edwards and Parry, 1993), which has only recently begun to be used in structural contingency theory (Meilich, 2003; Rogers, 2005). This provides an opportunity, in that the method offers an alternative way to make an assessment of misfit-performance, which is to be welcomed. The Edwards method, however, also poses a challenge, because it makes establishing the fit-performance relationships more difficult. What follows gives a conceptually oriented overview of the main issues, for details of the procedure the reader should consult the publications (e.g., Edwards and Parry, 1993).

Fit occurs where the level of a structural variable (e.g., formalization) matches that required by the level of the contingency variable (e.g., size). Because the level of the required structure is given by the level of the contingency variable, fit is where this matches the level of the actual structure. Following Keller (1994), if both the structural and contingency variables are measured on scales from 1 to 5, and the fit line is that the level of the structural variable equals the level of the contingency variable, then fit exists when both variables are of level 1, both are of level 2 and so on. Misfit is where the actual structure differs from the contingency variable, e.g., structure is 3 but contingency is 2, giving a misfit of 1 (i.e., $3 - 2$). The greater the difference between the structural and the contingency levels, the greater is the misfit, and so, consequently, the lower the organizational performance. Thus, misfit (M) is the difference between the structural (S) and contingency (C) levels, mathematically ($S - C$). (More formally, ($S - C$) only captures the misfit where S is greater than or equal to C , because if S is less than C then ($S - C$) is negative even though misfit is positive. More generally, the absolute difference between S and C is required, but this can be handled by inserting a term in the equation that says that, when S is less than C , the negative sign of ($S - C$) is turned positive, so that misfits are always positive. Edwards follows this kind of procedure. To avoid complexity in this brief presentation, these subtleties will be elided, to give just the essence of the method.)

Conventionally, structural contingency theory is sometimes validated through showing that performance (P) is a result of the degree of misfit:

$$P = a - bM$$

by demonstrating empirically that the slope, b , is negative in the regression (where a is a constant term). Misfit is the difference between the actual

structural level (S) and that required by the organization's level of the contingency (C), so that the researcher is evaluating b in the equation:

$$P = a - b(S - C)$$

In contrast, Edwards argues that this kind of difference term ($S - C$) can be unpacked into its constituent variables in a multiple regression. Thus the equation can be expanded into:

$$P = a - bS + bC$$

The b terms are identical in value, but opposite in signs (one being negative, the other positive). Here bS is the slope coefficient of the effect of S on P while simultaneously controlling for the effect of C on P ; and vice-versa for bC .

Therefore, a misfit effect can be shown by taking the main effects of S and C on P . If the b of S and C meets the requirement of being identical in value but opposite in sign, then this is evidence for saying that the b for S and for C is the same as the b for M . Then, the b for S and the b for C is the b for M . Hence, if the logic holds in empirical analysis, finding b for S or b for C gives the b for M . If the b is non-zero, then this confirms that misfit affects performance. A negative b for S and a positive b for C show that the effect of misfit is to decrease performance, as contingency theory states. Thus the effect on performance of the misfit between contingency and structure has been re-expressed into main effects of contingency and structure.

This can avoid the need to calculate the difference between S and C . One reason for wishing to avoid using ($S - C$) is that, because it is a difference term, it is less reliable than S and C (as explained below). Therefore, using the main effects of S and C reduces measurement error, leading to a stronger relationship that more accurately captures the true effect of misfit on performance. Thus, the Edwards method offers the opportunity for contingency theory to show more strongly the true effect of misfit on performance.

Edwards goes on to use this unpacking technique for other versions of the effect of misfit on performance, such as the squared term, which theoretically means that the effect of misfit is much worse at each level of misfit (methodologically, squaring also means that negative values of misfit are avoided, so no additional term is needed and these actual equations can be used):

$$P = a - bM^2 = a - b(C - S)^2 = a - bC^2 - bS^2 + 2bCS$$

This is a polynomial regression. Its meaning is that the slopes (b 's) for C^2 and S^2 should both be the same magnitude and sign (negative). And, the slope ($2b$) of the CS term should be twice that of the slopes (b 's) of each of C^2 and S^2 , and also be of the opposite sign to them. Thus, again, there is a pattern of testable predictions about the similarities and differences in the magnitudes and signs of the b 's (i.e., the partial slope coefficients of each term controlling for the other two). Once again, the effect of the misfit, the difference between C and S , has been re-expressed into main effects, here of C^2 and S^2 . Either the slope of the C^2 or the S^2 term gives b , the effect of misfit (M) on performance (P). Thus, again, the method yields an estimate of the effect of misfit on performance, without having to use the difference term, $(S - C)$.

Edwards goes on to argue that in empirically testing this equation, it is incumbent upon the researcher to also include lower order terms, thus the equation becomes:

$$P = a + b_1C + b_2S - b_3C^2 - b_4S^2 + 2b_5CS$$

This fuller equation allows evaluation of whether effects apparently attributable to the terms C^2 , S^2 and CS , and thereby caused by misfit squared, are really due to simple main effects of C and S on performance. (There are other methodological reasons for including C and S whenever CS is being evaluated.) Subsequently, Edwards goes further and says that when this quadratic (C^2 and S^2) is being evaluated, not only the lower order terms, C and S , but also the higher order terms, e.g., C^3 and S^3 , should be included and evaluated. Thus, Edwards imposes a series of additional tests beyond simply showing effects of the quadratic. More generally, he argues that for polynomial regression to be valid, the researcher must incorporate lower order and higher order terms to show whether some of the effect is really due to them. In his empirical example, using the fuller equation shows effects beyond just that of the quadratic.

Hence Edwards' method contains two ideas. One is the ingenious idea of using a simultaneous test of main effects of S and C to test for the effect of misfit. This offers an alternative method from the conventional one of testing for misfit effect by evaluating the effect of the difference between S and C on performance. Edwards' second idea is his requirement that any evaluation should also test the lower and higher order terms, that is, the fuller family of terms, from which a particular level of the polynomial is a sub-set. This addition of lower- and higher-order terms to the regression equation could be done even where the difference between S and C is being

used. Thus, it is an addition to the conventional procedure, rather than being necessitated by replacing the difference term ($S - C$) by the simultaneous main effects.

The resulting analysis is more comprehensive. However, it also may mean that some effects that would be ascribed to misfit from a regression of performance on misfit will be shown to be partly or wholly due to these lower or higher order terms. It makes for a new and more demanding set of criteria of what is required to empirically confirm that misfit lowers performance. The researcher can no longer just use the misfit term, nor just use its unpacked simultaneous main effects equivalent. Thus, proving contingency fit may be harder when following the Edwards' method and in that sense it is a challenge.

3.2 Other methodological issues

The multivariate interaction term is sometimes used to operationalize the fit-performance relationship, despite the term being seriously deficient for iso-performance. Nevertheless, it provides some degree of proxy for hetero-performance. Corrections for unreliability can enhance the misfit-performance relationship and this is particularly needed in fit-performance research because of the tendency of misfit to be measured unreliably. Developments in methodology also allow the study of whether managers already know about fits before research is conducted.

3.2.1 Multiple interaction term and iso- and hetero-performance

Some contingency analyses use the multiple interaction term of contingency (C) multiplied by structure (S), i.e., $C \times S$, to operationalize the effect of fit on performance. However, Donaldson (2001) has shown that this mathematical function fails to capture the contingency theory relationship between misfit and performance, in its iso-performance form.

In contingency theory, misfitted organizations are lower in performance than organizations in fit, i.e., on the fit line (Van de Ven and Drazin, 1985). For an organization in fit at $C = S = 3$, its performance is higher than an organization in misfit above the fit line at $C = 3$ and $S = 4$ (Figure 2.2). However, the multiple interaction term of performance, $C \times S$ (see Figure 2.5), states that performance at that point above the fit line, at $C = 3$ and $S = 4$, is 12 (i.e., 3×4), that is, greater than performance on the fit line at $C = S = 3$, which is only 9 (i.e., 3×3). Yet this is clearly wrong, in that misfit should produce lower performance than fit. In fact, the multivariate interaction term gives performances greater than fit for all points above the fit line, which is wrong for all of them. Moreover, for points above the fit

line, the greater their distance from the fit line, the greater their performance exceeds points in fit. Thus, the greater the misfit, the higher the performance – which contradicts the theory it is supposed to capture.

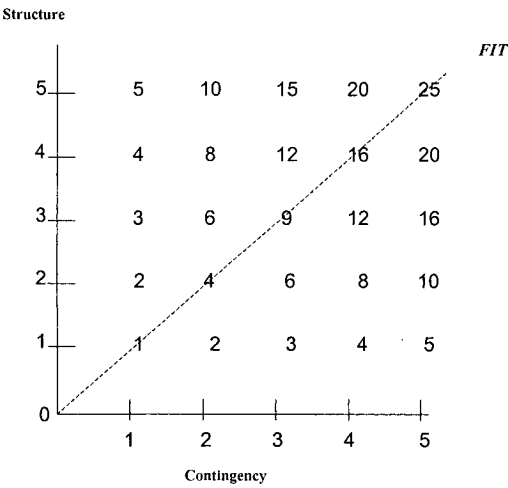


Figure 2.5. Performance from Fit and Misfit: Fit as a Multiplicative Interaction of Contingency and Structure

In contrast, if the misfit term, the absolute difference of $C - S$, is used to predict performance (Figure 2.2), then the performance of the point above the fit line of $C = 3$ and $S = 4$ is -1 , which is less than the point in fit at $C = S = 3$, which is 0 . Thus, the misfit, $C - S$, term gives the theoretically correct operationalization of the effect of misfit on performance, whereas the multivariate interaction term ($C \times S$) does not.

It may be objected that the multivariate interaction term is not an exact operationalization of the fit-performance relationship but it is a reasonable approximation for use in empirical work. However, a simple simulation shows that the correlation between misfit, $C - S$, and the multivariate interaction term, $C \times S$, is only weak, so that the latter is a poor operationalization of the former. The fit-performance relationship in this simulation is the traditional contingency theory relationship, which is iso-performance.

For the newer concept of hetero-performance, the multivariate interaction term correlates moderately with performance. Thus, the multivariate interaction term is a better proxy for hetero- than iso-performance. Hence, a positive correlation between the multivariate interaction term and performance should be regarded tentatively as some evidence for possible hetero-performance. Thus, the multivariate interaction term may produce evidence, not for the traditional concept of iso-performance, but for the new concept of the hetero-performance.

The multivariate interaction term is a much better operationalization of hetero- than iso-performance, in part because it contains the increasing performance along the fit line that defines hetero-performance, e.g., at $C = S = 2$ performance is 2, at $C = S = 3$ performance is 3 (Figure 2.4). For the multivariate interaction term, points along the fit line increase in performance: for $C = S = 1$ performance is 1 (i.e., 1×1), for $C = S = 2$ performance is 4 (i.e., 2×2) etc (Figure 2.5).

3.2.2 Unreliability

Structural contingency theory researchers have not traditionally acknowledged that misfit suffers from a problem of low reliability. However, misfit is a difference score, $C - S$, and the problem that difference scores tend to have lower reliability is well recognized among psychometricians. A difference score can have substantially lower reliability than its constituent variables (here C and S).

The unreliability of a difference score is greater the stronger is the positive correlation between its two constituent variables, e.g., C and S . In structural contingency research, C and S are often highly positively correlated, e.g., size and specialization (Donaldson, 1996). If C has a reliability of 0.8 and S has a reliability of 0.8 and both are correlated +0.6 (and assuming both C and S are standardized) then the reliability of the difference score ($C - S$) can be calculated as being 0.5 (Johns, 1981). Thus, while C and S may be quite highly reliable, their difference ($C - S$), the misfit term, can be far less reliable.

Unreliability makes the observed correlation in an empirical analysis under-state the true effect. If the true effect of misfit on performance is 0.4 but misfit has reliability of only 0.5, then the observed correlation will be the product of 0.4 and the square root of 0.5, which is 0.28, producing an observed correlation of only 0.28. Thus, the observed effect under-states the true effect by 30 per cent. Given the low power of many statistical tests, such smaller correlations could lead to erroneous verdicts of "not significant" and so to mistaken falsification of theory (Hunter and Schmidt, 2004). Thus the unreliability of difference scores is a potential trap in

research. The Hunter-Schmidt (2004, p. 34) procedure of applying a formula can be used to correct the observed correlation so that it becomes closer to the true value.

3.2.3 The value of modest correlations

Even where a correlation between fit and performance is significant, a coefficient of, say, 0.25 may be judged to be “too small to be of theoretical or practical significance”. Yet, in analyzing the effect of structural fit on performance, the existence of many other causes of performance mean that fit may well have a coefficient such as only 0.25. Thus, theoretically, one should expect smallish coefficients at best. For instance, if there are ten causes of performance that are independent of each other and all have equal effects, then each will correlate only a little over .3 with performance. The reason is that a correlation of 0.3 explains 9 per cent of the variance in performance, so ten such would explain 90 per cent. Therefore, because of multiple causes of organizational performance, any one cause, such as structural fit, may have a correlation of only about 0.3, and yet be theoretically meaningful.

Moreover, contingency theory holds that there are fits between each of numerous structural variables and their contingencies. Therefore the correlation between any one contingency-structure fit and performance measures only part of the total effect of structural fit on performance. Therefore, even if the total fit effect is substantial, any one contingency-structure fit is theoretically expected to be small.

The objection might be made that such a 0.25 correlation is not practically significant, explaining only 6.25 per cent of the variance in performance. However, a correlation of 0.25 equals a standardized slope coefficient of 0.25 (Hunter and Schmidt, 2004). Therefore, a one standard deviation increase in fit causes a one-quarter standard deviation increase in organizational performance. This is hardly a trivial effect. It has considerable importance practically. Thus, even modest fit-performance correlations can have considerable theoretical and practical value.

3.2.4 Managerial mental models

The question arises of whether the fits identified in structural contingency research are already obvious to managers through their experience. A study showed that not all managers are aware of the organic structures needed to fit environmental change, so that organic theory is not obvious (Priem and Rosenstein, 2000). Extension of this type of research to all the contingency and structural fits would be salutary, to address concerns

that structural contingency theory is obvious to practitioners. The methodology used by Priem and Rosenstein (2000) would seem to be applicable to any contingency structural fit, which should facilitate research.

4. CONCLUSIONS

Structural contingency theory can play a role in organizational design by specifying which structures fit which circumstances. While the heart of the theory is the statics of the effect of such fit on performance, the theory is also dynamic. Specifically, Structural Adaptation to Regain Fit (SARFIT) states how organizations change over time in their structures as a result of changes in their contingencies. Contingency change also is seen as endogenous in SARFIT, so that the theory posits disequilibrium rather than equilibrium. Similarly, there is scope for the development of structural contingency theory through the concepts of hetero-performance and quasi-fit. Consistent with this, structural contingency theory should continue to utilize a Cartesian, rather than a configurationalist, approach to fit. Claims that structural contingency theory is being rendered obsolete by new technology lack credibility.

Institutional theory posits adaption to the institutional environment but there are many shortcomings in the theory and its research.

Structural contingency theory is greatly assisted by research that empirically establishes that the relationships it posits between fit and performance are valid. The Edwards polynomial regression method provides an alternative way to assess the impact of misfit on performance. It locates this analysis in a more comprehensive analysis that makes for more exacting tests of contingency theory.

While the multivariate interaction term is sometimes used to operationalize fit-performance relationships, it is a very poor measure of the traditional fit-performance theory, iso-performance. However, positive results from multivariate interaction terms may be cautiously interpreted as some tentative encouragement for hetero-performance theory.

Misfit terms suffer from lower reliability and this can be corrected to give a more accurate estimate of the strength of these relationships. Thus improvements in methods may assist research to show a truer and more appreciative picture of the effect of fit on performance. However, there are theoretical reasons for expecting modest correlations, which, nevertheless mean that organizational design is of practical usefulness.

4.1 Informing the theory

Structural contingency theory informs the theory of organizational design by providing a comprehensive framework that relates variations in organizational design to variations in the situation of the organization (i.e., its contingencies). Many different aspects of organizational structure, such as formalization, decentralization and divisionalization are each related to contingencies such as size and diversification. In theory terms, contingency theory is sociological functionalism, explaining the existence of fits between structure and contingencies by their beneficial effects on organizational performance. However, the functionalist argument is incomplete without explaining why organizations move along the fit line by increasing their contingencies, e.g., size. The concept of hetero-performance provides the answer by holding that moving along the fit line increases performance. Functionalisms can lead to the notion that once having attained fit, this is equilibrium, however, the present theory is of disequilibrium. The theory herein posits that the higher performance from fit causes expansion and thus a new move in to misfit. Thereby, the theory is both functionalist and dysfunctionalist, in a model of organizational dynamics. Change occurs incrementally, producing a realistic theory of organizations.

4.2 Informing the practice

Organizational design can help managers to better attain higher performance for their organizations by adopting a more effective structure. The contingency approach helps managers to identify misfits between their structures and contingencies, such as size and diversification, which, in turn, are parts of the strategy of the organization. Given that there are numerous aspects of structure and that each may have more than one contingency that it fits or misfits, there are many possible misfits that can occur in an organization, each dragging down performance. Because there are multiple possible misfits – as well as multiple other causes of organizational performance – each misfit may have only a modest negative effect on performance. However, researchers should not dismiss such modest effects as being “not significant”, because managers who rectify a misfit can achieve worthwhile performance gains for their organization. By rectifying several misfits in organizational design, they can achieve substantial gains. It is in the nature of management that managers need also to solve problems in many other aspects of their organization, such as finance and marketing. By solving organizational design problems, while also solving these other problems, management can gain competitive advantage over rival organizations. The dynamic model offered here implies the added caution

that such successes trigger growth etc and so new moves into misfit. Thus, managers, especially in fast changing organizations, will need to revisit organizational designs every few years, in order to avoid misfit and performance loss.

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