The Contingency Theory of Organizations

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Fit Concept and Analysis

Fit is the concept at the heart of contingency theory. Contingency analysts strive to identify what constitutes fit. They seek to show the effect of fit on performance. This has been an increasing focus of contingency theory research. Because fit is so central to contingency theory and research we need to discuss it in detail. We need to ask what exactly we mean by fit. We also need to ask how we empirically establish the effect of fit on performance in terms of research design and empirical analysis.

This and the next chapter are intended to be read together. In contrast to previous chapters, they have a technical flavor by considering issues of modeling and methodology. Readers seeking a discussion of contingency theory in general terms may prefer to omit them, or to come back to them after reading the other chapters. However, those readers who want to perform contingency research will find that these chapters contain advice about how to conduct aspects of such research. Other readers who wish to evaluate the research findings in the literature will also find guidance in these chapters. We will begin with questions about the concept of fit and then move to methodological issues of research design and empirical analysis.

Philosophical Issues in Contingency Theory Research

Contingency Theory Is Not a Tautology

Contingency theory is sometimes criticized for being a tautology, that is, for being true by definition and therefore being circular reasoning. In logic, a *tautology* is an analytic statement masquerading as a synthetic statement; this means a definition presented as if it asserts something empirical about the world, whereas the statement defines the world to be that way (Ayer 1936). Because a tautology is true by definition it can never be falsified, so a tautology is not falsifiable (Bachrach 1989). The tautology criticism of contingency theory centers on the concept of fit. Contingency theory holds that fit produces high performance. Why does fit produce the highest performance? Because, by definition, fit is the combination of contingency and structure that produces high performance. At this most abstract level the fit-performance relationship is true by definition. Therefore the relationship between fit and performance is a tautology.

Yet it is a mistake to dismiss contingency theory for being a tautology, because scientific theories can contain such tautologies in some of their parts, while being logically and empirically valid scientific theories. Many of the most general scientific laws are true by definition. For example, Darwinian evolutionary theory states: the survival of the fittest. Why are they the fittest? The answer is: “Because they survive.” Thus the most basic idea or high-level general law is a tautology. However, Darwinian theory overall escapes being tautologous by giving the abstract theoretical statement more specific content. Survival properties are identified for each creature, for example, the long necks of giraffes help them survive because they can eat the leaves they need for food from the tops of trees. This more specific proposition is empirically testable and falsifiable. It is a lower-level proposition derived from the higher-level theory idea that the fittest creatures survive. Being a tautology, the high-level general law is not falsifiable, but the lower-level, derived propositions are, because they are not tautologies. Thus the theory is tested empirically by testing its lower-level propositions rather than its high-level general law. Thus Darwinian theory needs to be assessed as an overall theoretical structure composed of basic laws and specific propositions to see that the theory is not a tautology and is falsifiable.

The same is true for the contingency theory of organizations. The most abstract general statement of contingency theory about fit is a tautology. However, contingency theory, like Darwinian theory, moves beyond tautology by specific propositions that give content to the abstract idea of fit. This is done when contingency theory states what organizational structures fit which contingency and why. For example, a divisional structure fits a diversified firm, because a diversified firm's greater complexity of products and markets (relative to an undiversified firm) needs more information-processing, which is better done in autonomous divisions. Thus under the contingency theory umbrella nests a series of specific theories that connect a contingency with a structure. Each combination of the varying levels of the contingency and the structure is stipulated to be either a fit or a misfit, and a reason is given. It is these lower-level, more specific contingency propositions that are nontautologous and falsifiable. They render contingency theory, as an overall theoretical structure, as not being a tautology and as falsifiable.

Fruitfulness of Research Program Not Falsification

Although contingency theory is falsifiable, should we be attempting to falsify it? To be sound, a theory should meet the criteria of being potentially falsifiable. However, adherence to this logical criterion does not mean that contingency theory research should be seeking to falsify the theory. Instead, contingency theory research should be seeking to develop contingency theory and to reveal as fully as possible its potential. Thus there is a distinction to be drawn between falsifiability as a logical criterion and the act of falsifying a theory.

Popper (1945) holds that theories should be falsifiable and that scientific work takes the form of an energetic attempt to falsify existing theories to open the door to new, superior theories—albeit avoiding premature and erroneous dismissal of theories. The doctrine of falsification was created to demarcate between science and metaphysics (Popper 1959). The doctrine of falsifiability has influenced social and organizational scientists, leading some to the erroneous view that scientific practice not aimed at falsification is improper and unscientific. However, philosophers of science subsequent to Popper have stressed that, historically, fruitful science often develops despite it being falsified. Some early falsifications of a scientific theory can be erroneous because its validity can be seen only after the creation of an auxiliary science consisting of improved methods and complementary scientific theory, which is needed to reveal the truth of the basic theory (Feyerabend 1975). The development of the auxiliary science can take a long time. For instance, early tests of the Copernican theory of the solar system found it to be false (Feyerabend 1975). If astronomers had adhered to the doctrine of falsification it would have been dismissed, wrongly. A proper test of the Copernican theory required the development of an auxiliary science that involved tools such as accurate telescopes, and complementary theory such as Newton's mechanics. It took 150 years before valid scientific evidence confirming the Copernican theory accumulated and became conclusive (Feyerabend 1975). Thus the modern philosophy of science stresses that fruitful science consists of programs of research within a paradigm whereby proponents pursue the basic theories and practices, acting as advocates for their theory (Feyerabend 1975; Kuhn 1970; Lakatos 1974). This involves development of the auxiliary sciences that are required to show the truth of the theory. For contingency theory—as for any organizational theory—the same applies.

Contingency theory will only be revealed in its true light by carefully resolving technical problems and developing complementary theory. This entails a lengthy program of research over many years, to be pursued by adherents of the paradigm who act as its advocates. Only after lengthy prosecution will the full power of contingency theory be able to be assessed. Only then can the true value of contingency theory be known relative to other organizational theories (whose adherents will also pursue their programs). Mercifully, it should not take 150 years to get an accurate assessment of contingency theory! In topics such as organizational structure, where it has been pursued now for forty years (Woodward 1958), there is already considerable evidence establishing its validity, as we have seen. But even in the case of structural contingency theory there is need for further development to reveal fully its true validity. This chapter is about pursuing the contingency theory research program, including by building on existing work to further develop the required body of auxiliary methodologies.

This is not to say, however, that structural contingency theory could not, or should never, be falsified in principle. If, even after prolonged attempts to develop structural contingency theory, empirical research failed to support its major tenet (fit of structure to contingency causes high performance), then the theory would have been shown to be false. However, the accumulating evidence is much more positive, as we shall see in this and the following chapter, so that future falsification of structural contingency theory is unlikely.

The Relationship Between Fit and Performance

As we have seen in previous chapters, contingency theory holds that if the organizational structure fits the contingency, then higher performance results. Conversely, if the organizational structure misfits the contingency, then lower performance results. Therefore organizations move toward fit to gain better performance. This explains organizational change by contingency theory. It also explains why contingencies and structures are associated empirically. The idea that underlies all these explanations is that there is a fit between structures and contingency that positively affects performance. Some combinations of the contingency and organizational structure are better than others for performance. For each level of the contingency variable, there is a level of the organizational structural variable that produces the highest performance and thereby constitutes the fit. Thus fit is central to contingency theory because it explains variations in organizational performance, organizational change, and associations between contingencies and structures.

There has been considerable discussion in organizational studies about the definition of performance. Organizations can be considered to be seeking their goals, so that performance is the degree to which an organization attains its goals, which are set by those in authority over the organization (Parsons 1961). Alternatively, an organization can be conceived of as a system, so that its performance is equated to various aspects of systems functioning (Yuchtman and Seashore 1967). Alternatively again, organizations can be considered to be composed of numerous individuals and external constituencies that constitute stakeholders so that each individual or stakeholder group has distinct criteria and organizational performance is therefore multidimensional (Pfeffer and Salancik 1978; Pickle and Friedlander 1967). Each of these views of performance could be the basis on which appropriate operational measures of performance are selected in empirically studying the relationship between fit and performance.

Meyer and Gupta (1994) point out that measures of organizational performance may be multiple and uncorrelated with each other. They argue that there is a process whereby performance measures lose variation across organizations over time, so that they are replaced by new measures, uncorrelated with the old, which restore variation. To the degree that this is true, it potentially adds complexity to the performance measurement issue. However, within a period, performance measures remain viable so that studies can use them, and also the results of one study can be compared with those of another study. Across time periods, performance measures might differ, though conceptually they might still all be considered to be measuring performance at a more abstract level and therefore be comparable. For instance, if organizational goals change, the new performance measures are still assessing the degree of goal attainment, so can be compared to the degree of attainment of different goals at another period.

Given the importance of fit-performance, it has been investigated empirically in contingency theory research on organizational structure from the earliest studies onward (e.g., Child 1975; Donaldson 1987; Drazin and Van de Ven 1985; Hamilton and Shergill 1992, 1993; Hill, Hitt, and Hoskisson 1992; Jennings and Seaman 1994; Khandwalla 1973; Lawrence and Lorsch 1967; Powell 1992; Woodward 1965). What exactly is meant by fit operationally in contingency theory research? There are two main operational concepts in the literature: congruence and interaction (Pennings 1987).

Fit as Congruence

The operational concept of fit as congruence holds that fit is a combination of the levels of the contingency and structure that produce higher performance. Other combinations are incongruent so that the level of the structure does not fit that required by the level of the contingency and hence lower performance results (i.e., lower performance than in fit). Pfeffer (1997, p. 158) refers to this aspect of structural contingency theory as the "consonance hypothesis," meaning "'that those organizations that have structures that more closely match' or fit 'the requirements of the context' will be 'more effective than those that do not' (Pfeffer 1982, p. 148)." Similarly, Pennings (1987, p. 225) refers to the matching concept of fit, which he defines as: "… a value on a structural dimension for each level of an environmental dimension which will maximize effectiveness." As we have discussed, in contingency theory the contingency includes the environment, but is a wider concept that extends to "context" more broadly, thereby encompassing intraorganizational variables, such as size.

Congruence (or consonance) is seen in the exemplar of fit-performance relationships—between technology and organizational structure in Woodward's (1965) pioneering contingency study. The structural variable of the span of control of the first-line supervisor was associated with technology in a curvilinear relationship, so that it rose and then fell as technology advanced. For unit and small batch the span was low, for mass production it was high, and for process production it was again low. Those firms that were at or about the mean span of control for their technology category performed higher than the firms whose spans of control deviated from the means (being either lower or higher). This held for each of the three technology categories. Thus, in this study, fit is having the mean structural value for the level of the technology contingency, and misfit is deviation from the mean.

This is the general idea across all studies that operationalize fit as congruence. There is some line of fit, which in Woodward (1965) is curvilinear but is usually linear. This is the line that connects all the points of fit. For each level of the contingency variable there is a level of the organizational structural variable that is the fit (i.e., yields the highest performance). Deviation from this fit line constitutes misfit and so produces lower performance. This kind of logic is seen in many contingency analyses of organizational structure. For example, Child (1975, p. 21, Figure 1) found that there was a fit whereby larger organizations were more bureaucratically structured. Organizations that lay on this fit line had higher performance. Those firms that lay off this fit line had lower performance. Deviation from the fit line is misfit.

This idea can be taken farther by conceptualizing degrees of misfit. The farther the organization is away from fit, the greater is its misfit and the lower is its resulting performance expected to be. The distance from the line at which the organization lies becomes its degree of misfit (see Drazin and Van de Ven 1985, p. 520, Figure 2[a]). The fit line may be represented empirically by the regression line of the organizational structure on the contingency variable, among the higher-performing organizations in the sample. The actual position of an organization in misfit is the residual, that is, the difference between the actual value and that expected from the regression. In other words, the degree of misfit of an organization is the amount of discrepancy between actual and ideal (i.e., the fit) scores. This allows quantification of the degree of misfit. It articulates the idea of fit as congruence between structure and contingency, and of misfit as incongruence between them.

Fry and Smith (1987) suggest that fit or congruence has many possible relationships with performance. They hold that the traditional view of the relationship between congruence and performance as positive is only one possibility. They state that congruence could have a negative or curvilinear relationship with performance. However, if more congruence leads to less performance, then it is not congruence or fit, because by definition congruence or fit leads to higher performance. Thus the relationship between congruence or fit and performance is always positive.

Again, Fry and Smith (1987) state that congruence can have positive effects on some performance outcomes but negative effects on others. But if a combination of organizational structures and situational factors has a negative effect on performance, then that combination is not a congruence or fit, instead it is an incongruence or misfit. Thus while the combination may be a congruence or fit for some performance outcomes, it is an incongruence or misfit for other congruence outcomes. It would be clearer to say that a combination is congruent for those performance outcomes on which its effect is positive and incongruent on those performance outcomes on which its effect is negative. Thus in specifying whether a combination is congruent or incongruent, there is a need to specify which performance outcomes are positively affected. There may be some other performance outcomes on which the effect is negative. In this way we preserve the meaning of a congruent or fit state as being one that always raises performance.

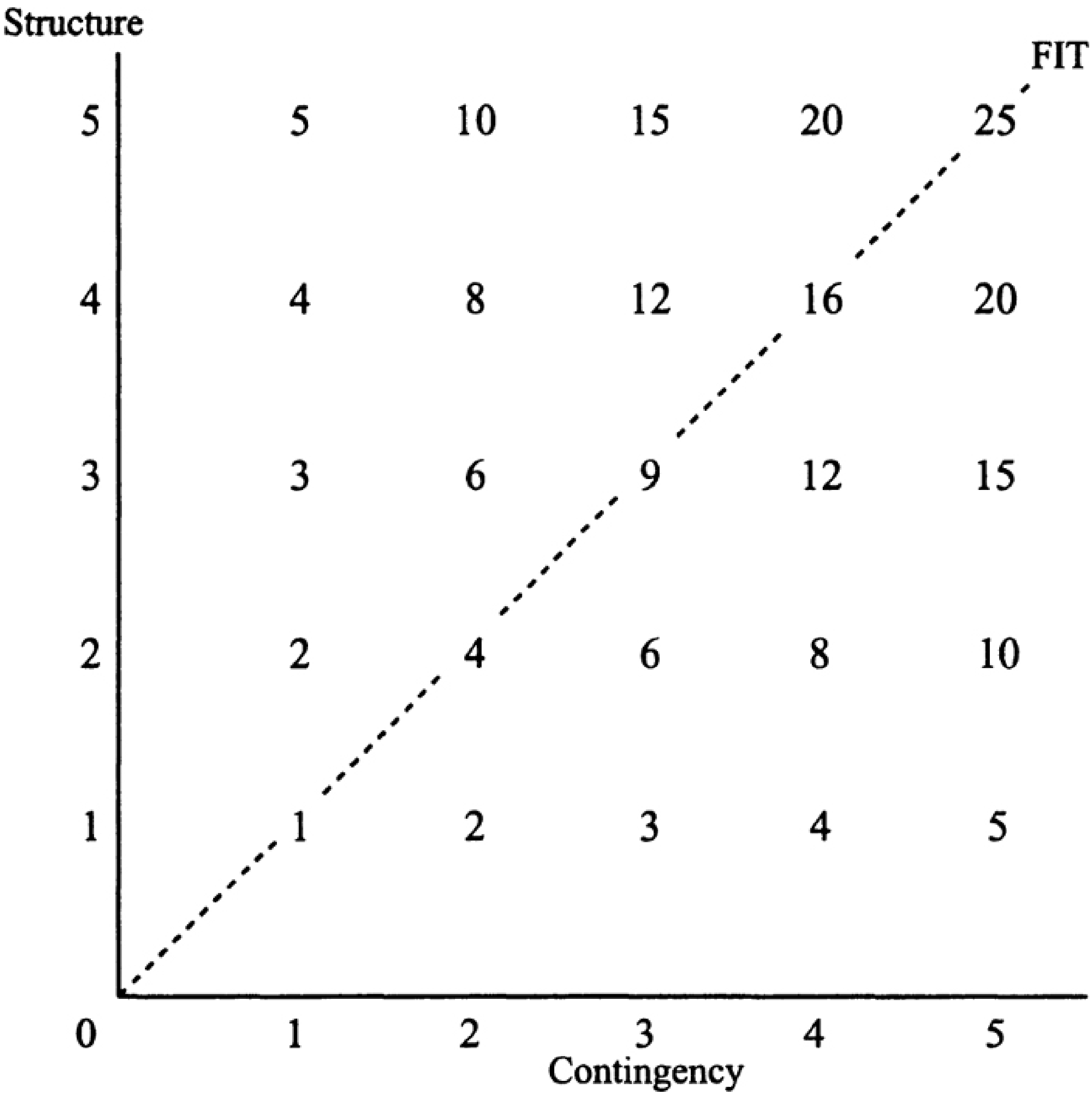
Further, Fry and Smith (1987) hold that congruence can have positive effects in the short run but negative in the long run. By definition, however, a congruence or fit always produces positive outcomes. Once again, it would be clearer to say that the combination that is congruent for the short run is incongruent for the long run and vice versa. This discussion brings out that congruence of fit is always embedded in a causal theory. That theory needs to be made explicit when saying that one combination of contingency and organizational structure is congruent or fitting. Thus a congruence or fit is with respect to some particular outcome over some time period. For another performance outcome or time period that combination may be incongruent. The discussion here is of logical possibilities, in the spirit of Fry and Smith (1987). Whether a congruence that raised performance would reduce some other aspect of performance, or whether congruence differs for short- and long-run performances, would need to be established empirically. The logical possibility of such differences does not guarantee that they actually exist.

Fit Is Not Interaction

There is a second operational definition of the fit concept in the literature (Pennings 1987). This is fit as an interaction between the contingency and the organizational structural variable. Specifically, fit is measured by a multiplicative interaction term, that is, the contingency variable multiplied by the organizational structure variable (Schoonhoven 1981). As Pennings (1987, p. 225) states: “it is assumed that effectiveness is high when high levels of both environmental … and structural … dimensions are present, but that it is low when either dimension is low or absent.” However, the reason that such an interaction term is considered to be an operationalization of the fit concept is unclear. Fit combines the contingency and organizational structure variables. Interaction terms are customarily used for combinations of variables in multiple regression. Therefore the interaction term has been applied to test the fit concept in multiple regression analysis. However, this presumes that a fit is a multiplicative interaction (i.e., the contingency and structure variables are multiplied together to give an interaction term), and this is not necessarily so. Certainly some argument is required to justify the assumption that fit is a multiplicative interaction. Conversely, there are very many problems in operationalizing fit as an interaction term, and these will be discussed at various points in this chapter. Fit is not a multiplicative interaction in the way that the fit concept has been used in the seminal contingency theory studies. As seen above, in the seminal studies fit is congruence. For Woodward (1965) fit is congruence: High performance occurs when the structural variable matches the technological contingency. Similarly, for Child (1975), fit is congruence: High performance occurs when the structural variable matches the size contingency.

Moreover, a multiplicative interaction term does not capture the relationship between congruence (fit) and performance. Consider a model in which the structural variable, S, is shown on the vertical axis and the contingency variable, C, is shown on the horizontal axis (see Figure 7.1). The structural variable, S, needs to fit the contingency variable, C, for high performance to result. Suppose, for simplicity, that the fit is that S needs to equal C. Therefore the fit line is at 45 degrees to both the vertical and horizontal axes. When C is 2, S must be also of value 2 for it to be in fit. When C is 2, if S is 3, S is too big to fit so it is actually a misfit, so lower performance would result. However, the multiplicative interaction term would say that C of 2 with S of 3 equals performance of 6 (= 2 × 3) and so is better than C of 2 with S of 2 which equals performance of 4 (= 2 × 2). Thus the multiplicative interaction attributes higher performance to the misfit than to the fit. Clearly, the multiplicative term fails to calibrate the effect of misfit on performance. The essence of a good operationalization of fit is that organizations in misfit must score lower than those in fit. The multiplicative interaction term does not do this and so is not a measure of fit.

Figure 7.1. Performance From Fit and Misfit: Fit as a Multiplicative Interaction of Contingency and Structure



Another issue is that the multiplicative interaction term assumes that the fit is a straight line. However, some of the fits are not linear, but are curvilinear. For example, Woodward (1965) produced evidence that some of the fits between technology and structure were curvilinear. As we have seen, the fit of span of control of the foreman to technology was that the span first increased but then decreased as technology advanced, so that it was an inverted U-shaped curve (Woodward 1965). A multiplicative term assumes that the fit of span to technology would be a higher span at the more advanced technology than at the medium technology. The multiplicative term would therefore award a high score to a firm that had a large span and had the most advanced technology, even though that firm was in misfit. Thus the multiplicative interaction term fails to operationalize curvilinear fits.

Van de Ven and Drazin (1985) state that misfit is appropriately measured by a deviation score and advocate the Euclidean distance formula. However, they discuss this under the heading of interaction concepts of fit. This choice of language seems unhelpful, given that, as Van de Ven and Drazin (1985) argue, interaction terms fail to capture the deviation-from-fit concept. Therefore it seems preferable to use the word *congruence* rather than interaction to conceptualize fit.

Thus the multiplicative interaction term is not a correct operationalization of the fit construct. The underlying model of the relationship among the contingency, the organizational structure, and performance in the multiplicative interaction term is not that postulated by the fit idea. An interaction term tells us something that may be of interest but conceptually it does not have the meaning of fit that has existed in contingency theory research. This meaning of fit is as congruence and so researchers wishing to measure the degree of fit should use measures of how close the organization is to the fit line.

However, a study by Powell (1992, pp. 127–128) finds similar empirical results from using the two different operationalizations of fit: congruence and interaction. Thus the choice between the two methods may sometimes not affect the results. Nevertheless, the two methods are not the same conceptually and so there can be no guarantee that they will always produce similar results, so research wishing to study fit in the sense that has been meant in contingency theory research should use the congruence measures, not the interaction term.

The Fit Line as Iso-Performance

In an important article that has helped define thinking about fit in contingency theory research, Van de Ven and Drazin (1985) state, *inter alia*, that the fit line is a line of iso-performance. *Iso-performance* means equal performance, so that each point on the line causes performance equal to every other point. This is seen for example in Woodward's (1965) study of the fit of span of control to technology. Those firms lying at fits were the highest performers in the whole study even though there were three different fits, one for each technology category. For instance, Firm A would be in fit with its mass production technology and Firm B in fit with its process production technology. Despite being in different fits, the two firms have equal performance ratings, that is, both are in the highest performing subgroup of all the firms in the study. Thus performance was increased by being *on* the fit line, but there is no increase in performance from moving *along* the fit line. Iso-performance means that the fit to low levels of the contingency variable produces the same performance as the fit to high levels of the contingency variable.

Hence the iso-performance concept articulates something very basic about contingency theory research: All fits are equally good. For each value of the contingency variables there is a value of the organizational structure that is a fit that produces the highest performance for that value of the contingency. This, as we have seen, is the fundamental fit, or congruence, idea of contingency theory. But the empirical research from the pioneering study of Woodward (1965) onward also contains the idea that the high performance of one fit is the same as the high performance of every other fit between that organizational structural and that contingency variable. Thus the high performance for one value of the organizational structural variable that is a fit is the same as that produced for any other value of that organizational structural variable that is a fit. Again, the high performance of a fit for one value of the contingency variable is the same as that produced by the fits for any other value of that contingency variable.

The implication is that each point of fit on the line of fit of bureaucratic structuring to size produces equal performance to every other point. Similarly, each point of fit on the line of organicness to task uncertainty produces equal performance to every other point. However, the performance effects of fit between one aspect of structure and its contingency can differ from that of another aspect of structure and its contingency. For example, the effect on performance of the fit between size and bureaucratic structuring might be different from the effect on performance of the fit between task uncertainty and organicness. Whether these two effects are similar or different is a matter for empirical research. Iso-performance means that fit effects on performance are the same *within* one structural aspect and its contingency rather than *between* structural aspects and their contingencies.

Another problem with fit as a multiplicative interaction term is that it is incompatible with fit as iso-performance.

Reverting to our earlier example (Figure 7.1), if the fit line is defined as S equals C, then when S and C are both 2 then there is a fit, and when S and C are both 3 then there is another fit. According to iso-performance, both these fits would produce the same performance. However, using a multiplicative interaction term, S multiplied by C means that the first fit is 4 (= 2 × 2) and the second fit is 9 (= 3 × 3); therefore the performance of the second fit would be much greater than that of the first fit. Thus multiplicative interaction terms hold that performance is increasing as the organization goes along the fit line, which is not a line of iso-performance. This is another reason to avoid the multiplicative interaction term in seeking to operationalize the traditional contingency theory research concept of fit and showing its performance effect.

Problems with Equifinality

Some scholars argue that there is "equifinality," by which they mean several different ways to obtain the same outcome (Gresov and Drazin 1997). Doty and Glick (1994), writing as configurationalists, use "equifinality" to mean that each configuration or type is equally effective. This of course is contrary to contingency logic, which holds that the type that fits its situation is more effective than the other types that are misfits. We have already offered a critical observation about equifinality in configurationalism (in Chapter 5).

In discussions of contingency theory, *equifinality* may be used to mean that there are several different fits that are all equally effective in the same situation. Thus, for a given level of the contingency factor, an organization could have any one of several widely differing structures and still be in fit and have high performance. This goes against the contingency logic that for a particular level of the contingency variable there is one level of the organizational structure variable that produces the highest performance and thereby is the fit (Pennings 1987, p. 226). Where different organizational structures have been shown to be equally effective in the same industry, the firms can be seen to differ in their contingency so that each of the different structures is the fit for its situation. For example, Child (1977, 1984) has argued that, in the same industry, firms that had functional structures had equally high performance as firms with divisional structures. However, Donaldson (1985, pp. 148–151) has pointed out differences between the firms and argued that these were differences in contingencies that explain the different structures so that each firm had to adopt a particular structure to fit its contingencies, so that there was no equifinality.

Equifinality could also be taken to mean that the fit is not a line but, instead, a broad band, so that for a given level of the contingency variable, the fit is a range of values of the organizational structure. However, the existence of such broad bands of fit has yet to be shown empirically. Empirical analyses show fit to be a line (e.g., Child 1975, p. 21, Figure 1). Thus the equifinality notion is not supported to date.

Rather than equifinality being a range of fits for each level of the contingency, some authors use equifinality to mean that the fit to each level of the contingency produces the same (or similar) performance. In this meaning of equifinality it becomes the same as iso-performance, so that showing iso-performance establishes equifinality. However, equifinality carries connotations of choice, in that if there is more than one way to achieve high performance, then an organization can choose between them. The fact that there are numerous positions that produce high performance, one at each level of the contingency, does not mean that an organization can freely choose among them. An organization is confined to the fit to its level of the contingency variable, or to levels of the contingency variable that it can feasibly attain. For example, an organization has a certain size, so it is restricted to the fit to its level of the size contingency, or to fits to adjacent sizes that it could feasibly attain. Therefore to equate equifinality with iso-performance is potentially confusing because equifinality tends to be used to mean that there is choice, whereas iso-performance can exist without choice.

Jennings and Seaman (1994) found two combinations of strategy and structure that produced high performance in their empirical study: defender strategy with mechanistic structure and prospector strategy with organic structure. They interpret these findings as support for equifinality, in that the performance of the two groups in fit was similar even though each had different combinations of strategy and structure. However, this interpretation assumes that each organization was free to choose between the prospector and defender strategies. The possibility of any situational constraint was not examined, such as by investigating whether the organizations following one strategy differed in their situation from those following the other strategy. Insofar as strategies such as being a low-cost defender hang on contingencies such as size that give scale advantages (Porter 1980), then these strategies are not free choices for an organization. Thus where a study demonstrates iso-performance, such as that by Jennings and Seaman (1994), we should be cautious about accepting that there is also equifinality until the lack of determinants has been demonstrated.

Managerial Decision Not Selection Fit

Van de Ven and Drazin (1985) distinguish three concepts of fit: selection, interaction, and systems. They argue that confusion and problems in the contingency theory literature can be resolved by following their schema. Van de Ven and Drazin discuss organizational structures but say that they are applicable to other organizational characteristics. There is much to be welcomed in the concepts of Van de Ven and Drazin, but we shall argue that their three concepts of selection, interaction, and systems would be better reconceptualized as managerial decision, congruence, and multifit, respectively. We have discussed interaction fit above, arguing that it is better termed *congruence*, and will discuss systems fit in the next section. Here we will discuss the concept of selection fit.

Van de Ven and Drazin (1985) use the word *selection* to describe the process whereby organization structure comes to be correlated with the contingencies. Selection consists of natural selection through which misfitted organizations are culled and managerial selection through which managers make the decisions about structure. Drazin and Van de Ven (1985) support their conceptual arguments with an empirical analysis. They show that there are correlations between several structure variables and the contingency, which they see as supporting natural selection. Further, they show that the correlations are greater for aspects of structure and process under management control, thereby supporting the concept of management selection.

Natural selection would explain fit among firms by saying that the misfitted firms failed to survive. However, the units of analysis within the empirical study of Drazin and Van de Ven (1985) are units within a public-sector organization, so that a misfitted unit would not go bankrupt and disband, hence misfit and low performance would not necessarily lead to lack of survival. Therefore the correlations between structure and contingency in their empirical analysis would not seem to be brought about by natural selection, though their conceptual point may apply to free-standing organizations, such as firms. Thus for some organizations, none of the correlations between their structure and contingency variables are caused by natural selection and all are brought about by managerial selection. However, where referring to managerial decisions over structure it might be preferable not to use the word *selection*, which, because of the influence of population-ecology, has come to have strong connotations of natural selection in modern organizational theory. It may be better to use the term *managerial decision* to distinguish it from natural selection. This helps better recognize that almost all organizations are shaped to some degree by the decisions their managers make, without natural selection having necessarily played a part.

Combining Contingencies and Fits

The issue arises of how to combine more than one contingency to determine the fit of an organizational structure. The issue also arises of how to combine multiple fits. In our view all of these combinations should be seen as following a simple process of addition (or subtraction).

Multiple Contingencies

There may be more than one contingency for an organizational structural variable. The effect of one contingency factor is added to the effect of the second factor to determine the fit. For example, large size requires a high degree of bureaucracy, and if the task is routine, then this also requires bureaucracy, so that the fit is even more bureaucratic than it would be for just large size or routine on their own.

Sometimes contingencies may make opposing requirements for the organizational structures needed to fit each of them. In such a situation, the contingencies have "conflicting implications" (Child 1972b, p. 16) for structure, and they are termed "contradictory contingency factors" by Mintzberg (1979, p. 474). It is sometimes felt that the contradictory implications of each contingency leads to a zone of choice (Child 1972b, p. 16). Yet the logic of contingency theory is that if one contingency specifies a high level of the organizational structure as the fit and a second contingency specifies a low level of the same organizational structure as the fit, then the fit is a medium level of the organizational structure. Where contingencies make conflicting prescriptions, the lower level of a structural variable that one prescribes is subtracted from the higher level prescribed by the other. This means mathematically that the effect of each contingency in determining the fit of an organizational structure that is subject to more than one contingency is additive. Hence the fit will be singular and so no zone of choice exists.

Consider the case where an organization is large and yet in an unstable environment that mandates the organization to innovate. The large size requires a bureaucratic structure while the innovation requires an organic structure, thereby creating an apparent conflict. However, the large size is dealt with by a bureaucratic macro-structure, such that the overall organization has many hierarchical levels, many departments, many administrative specialists, and many administrative rules and procedures. The requirement for innovation is dealt with by adopting organic elements in some parts of the micro-structure, that is, in those parts that innovate, for example in R&D and in project teams, leaving other parts quite mechanistic, for example, the production department (Lawrence and Lorsch 1967). Thus the opposing tendencies can coexist because some parts of the organization reflect the logic of large size and bureaucracy while other parts reflect the logic of innovation and organicness (as shown in Chapters 2 and 3). More specifically, large size requires high formalization, while innovation requires low formalization, so that the prescriptions of these two contingencies for formalization are in conflict. The overall level of formalization in the organization reflects the effects of both large size, which is pushing to raise it, and innovation that is pushing to reduce it. The administrative macro-structure has high formalization, while within this, departments that deal in innovation (e.g., R&D) have low formalization. The resulting, overall level of formalization is less than it would be for a large but noninnovative organization and higher than it would be for a small, innovative organization. Hence the lower level of formalization prescribed by innovation is subtracted from the higher level of formalization prescribed by large size. Thus the level of formalization reflects the additive effects of innovation and size. It is a single value rather than a zone of several fits that create choice.

Gresov (1989) found an empirical effect of the conflicting contingencies idea. He examined the fit of structure to both the task uncertainty and horizontal dependence contingencies simultaneously. He found that fit and performance were related where both contingencies required similar structures, but that where their requirements conflicted, the relationship broke down and units had lower performance, supporting the argument that conflicting contingencies lead to misfit. Conflicting contingencies may increase the probability of erroneous management choice and hence of misfit, rather than signifying equifinality and a range of equally effective structural choices. There is scope for replication of these results and further empirical examination of the conflicting contingencies issue.

Combining Multiple Fits

As we have seen, within the contingency theory of organizational structure there are a number of different fits between various aspects of organizational structure and their contingencies. The question arises of how to combine more than one fit to assess their total effect on organizational performance. Some analysts have suggested that the fits are additive, in that the first fit is added to the second fit to yield the overall effect on organizational performance (Randolph and Dess 1984, Exhibit 2, p. 123). In our view, this additive model of the effects of multiple fits is sound.

Van de Ven and Drazin (1985), however, argue that the overall effect of multiple fits is not the sum of their individual effects and so is not additive. They advance a model of the combination of multiple fits as being a systems fit. In a systems fit, the effect of multiple fits on organizational performance is not just the sum of the effect of each fit on performance. Instead, there is some holistic property that is not captured by an atomistic analysis of each fit separately that then just combines them together (Drazin and Van de Ven 1985). Thus, they argue, the effect of multiple fits cannot be calculated by simply adding up the effect of each fit on performance.

Drazin and Van de Ven (1985) examine separately the pairwise fit of each structure and process variable to the contingency variable and its relationship with performance (measured by efficiency and satisfaction). They show that each fit attains only very limited support—only four out of twenty-two are significant and one of these has a sign contrary to the theory. They then show that the *systems fit* is significantly correlated with performance (both efficiency and satisfaction) in the way theoretically expected. While this is evidence that multiple fits are stronger than pairwise fits, this is no proof of systemic properties of a holistic kind whereby the whole is more than the sum of its parts. The Euclidean distance formula used by Drazin and Van de Ven to calculate systems fit sums the effects on performance of each of the pairwise fits. It is an additive model. Thus their systems fit measure is nothing more than the sum of its parts. Therefore the greater strength of the systems fit than each of the pairwise fits is caused by the summation of many small effects. Furthermore, pairwise fits suffer unreliability of measurement that reduces their observed effect on performance. Summing across the pairwise fits produces an additive index that will be less unreliable and so produce a truer correlation. Hence the superiority of the multiple fit over the pairwise fits is compatible with it being the sum of the parts and is not evidence of holistic properties.

Drazin and Van de Ven (1985) also argue, in part, by an illustration. This is a curious illustration because in it the effect of the multiple fits on overall organizational performance is calculated by simply adding up the effects of each fit on performance. Thus in the illustration the whole is simply the sum of its parts. It therefore illustrates the point against which the argument is being made. In their illustration (Drazin and Van de Ven 1985), an individual fit is often not associated with total performance of the organization. However, this is because most of the fits are negatively correlated with each other so that most of them have zero correlation with total performance. Hence each fit affects performance, but most of the fits have no correlation with total performance because of the suppressing effect of the other fits. Thus the lack of association between many of the individual fits and total performance in this illustration is no more than confounded correlation. Hence, the seemingly paradoxical result is explained through considering the correlations between each of the variables, that is, reductionism and not holism.

Thus we can see that the systems fit model really boils down to the additive model. We suggest that researchers in contingency theory use additive models to analyze the effects of multiple fits on performance. This additive model applies both to combining multiple fits of an organizational structural variable to various contingencies and to combining multiple fits of various organizational structural variables to a contingency. It also applies to more encompassing analyses that combine multiple fits of various organizational structural variables to various contingencies. Thus researchers should use the concept of multiple fits, that is, multifits.

The Identification of the Fit Line

So far we have talked about the fit line, but how do we know where it is? Conceptually it is the line of points of fit, that is, the series of values of the organizational structural variable each of which constitutes the fit for a particular value of the contingency. But how do we identify what is the value of the organizational structural variable that fits each value of the contingency? Two ways of answering this question may be distinguished: the theoretical approach and the empirical approach.

The *theoretical approach* is that for a particular organizational structure a contingency factor is identified through theoretical analysis. The specific values of the organizational structure that fits each different value of the contingency are then identified by thinking through the logic of the argument. A matrix of all the possible combinations of the values of the contingency and organizational structure is constructed. Then each combination is identified as either a fit or a misfit. One can then inspect the pattern of cells in the matrix that are fits and see whether it forms a straight line or a curve or some other nonlinear pattern.

Having generated a theoretical model on an *a priori* basis, we can test its validity empirically. This involves examining whether the combinations designated as being fits actually perform higher than those designated as being misfits. The first step may be to calculate the performances of all the cells that are fits and compare this subtotal with the performances of all the cells that are misfits (e.g., Donaldson 1987; Hamilton and Shergill 1992). This aggregate analysis has the disadvantage that some cells labeled as fits may actually be misfits and vice versa; the actual performance of the individual cell is not known, so it may be obscured by the aggregation. However, it has the advantages of larger numbers, whereas the number of cases in the individual cells may be too small to be reliable. The aggregate method allows a quick test of the overall model and if positive encourages further research, whereas a negative result is an important signal that may lead to a reassessment of the fit model or, indeed, of the theory. The second step is to calculate the performances of each cell and ascertain that each of those designated as fit actually has a performance higher than those designated as a misfit (and vice versa for the misfit cells). A negative result for a cell may indicate that it is actually a misfit rather than a fit (or vice versa) and lead to a reassessment of the theory for that particular combination of contingency and organization structure.

Conversely, instead of starting with a theory, the *empirical approach* starts with the data and then seeks to find a pattern, which is then interpreted theoretically. The analysis examines various combinations of the levels of the contingency and structures to see which produce highest performance. The high-performing combinations are the fits and the low-performing are the misfits. A theory would then be developed of why certain combinations are fits that are effective and others misfits that are ineffective.

In a completely empirical approach the contingency factor itself may be discovered empirically. Initial attempts fail to find an association between an organizational structure and organizational performance. No main effect having been found, the search is then for moderators of the relationship between the structure and performance. A frequent move is then to look for variables that are associated with the structure. Such an association would be expected if the variables were moderators of the effect of the structure on performance, that is, contingencies. The reason for the association is that organizations would tend to move into fit to gain the resulting higher performance. Therefore variables found to be associated with the structure are then subject to an analysis to see whether they are in fact contingencies, by seeing whether these variables moderate the relationship between the organizational structure and performance.

What we have just described is an empirically based procedure (i.e., an emergent or data-driven procedure). Some would castigate it as “a fishing trip,” but there is some role for it. Contingency theory research on organizational structure has quite often gone from initially seeking associations between contingency and structure to then examining the effects of combinations of contingency and structural variables on performance. This is seen in the research on technology and organizational structure (Woodward 1965) and on size and bureaucracy (Child 1975; Pugh et al. 1969).

The two different approaches for identifying the fit line, the theory-driven and empirical-driven, are extremes. Less extreme than either of these two research procedures might be the use of some mixture of theory-driven and empirically driven approaches.

Validation of the Fit Model

Once a model of what constitutes fits and misfits between structure and contingency has been created, it has to be validated empirically. This raises two methodological issues: causal inference and measurement of the relationship between fit and performance.

Contingency theory holds that the fit of structure to the contingency positively affects performance. But how can we be sure that fit is a cause of performance? Given that a cause precedes an effect, fit needs to be assessed at one point in time and performance at a subsequent time point. There is no theory that specifies the time lag, but a two-year period between fit and performance produces a positive effect of fit on performance (Donaldson 1987; Hoffman, Carter, and Cullen 1994). Thus we can have more confidence in making the causal inference that fit is a cause of performance—and that performance is an effect of fit—where fit is measured at a time prior to the point at which performance is measured. Thus a diachronic research design is preferable. However, some research designs are cross-sectional (i.e., synchronic), so that they study fit and performance at the same time. Indeed, being more exact, while some such studies collect the structural and performance data at the same time, the performance is for a time prior to that of structure (Dalton, Daily, Johnson, and Ellstrand 1999, p. 680), such as an average of several years of profitability or sales growth prior to the date for which structure is measured (e.g., Child 1974). In such cases, strictly speaking, an observed association is evidence for an effect of performance on fit, so that performance is a cause of fit. Such studies are conventionally interpreted, however, as investigations of the effects of fit on performance. Nevertheless, causal inference that fit affects performance is more certain where fit precedes performance, so that research designs should incorporate this feature. (The issue of whether performance affects fit will be discussed more fully below.)

Other causes of performance may confound the effect of fit on performance and these need to be controlled in the research design. Because in contingency theory the dependent variable is performance, which is obviously affected by many variables other than contingency fit, there is ample scope for such confounding variables. The combined effects of the causes of performance other than fit may be great and may be greater than the fit, so rendering confounding more feasible. Other causes of performance only become confounds, however, if they are correlated with fit. Sometimes such a correlation arises because the confound and the contingency fit variables are causally connected or have a systematic association, other times a correlation will exist by chance in a sample of organizations.

The appropriate procedure is to seek to control for such possibly confounding effects of other causes of performance. This may be achieved by holding constant other factors by studying only organizations that are in the same category, for example, the same industry (Dess, Ireland, and Hitt 1990). Alternatively, it may be achieved by using a control group of similar organizations that differ only in their contingency fits. However, the more usual approach is to measure each possible confounding variable and enter it into a multivariate statistical analysis that assesses the impact of fit on performance, controlling for the confounds. Such other causes of organizational performance that may be controlled statistically in analyses of fit include industry concentration, firm size, risk, and leverage (Hamilton and Shergill 1993).

Turning to the measurement of the relationship between fit and performance, there are three main ways this is done statistically in the literature: subgroup analysis, regression analysis, and deviation analysis.

Subgroup Analysis

In subgroup analysis the sample of organizations is broken into a number of groups, and their performances are compared. Typically there are two subgroups: the fits and the misfits. As noted earlier, it is an advantage that the number of cases in the subgroups can be reasonably large because the sample is being broken into only two subsamples. The comparison between the subgroups may be of various statistics: means, regression coefficients, and correlations.

Means

Perhaps the simplest form of subgroup analysis is to create two subgroups—fits and misfits—and then show that the mean performance of the fits is superior to that of the misfits. An advantage of this procedure is that the performances of organizations are aggregated within each subgroup, and this tends to produce a more reliable performance score than for organizations individually.

Regression

If there is fit between an organizational structural variable and a contingency that leads to higher performance, then organizations will tend to move into fit, leading to an association between the organizational structure and the contingency. This association produces a correlation between the organizational structure and the contingency. This in turn leads to a slope in a regression analysis of the organizational structure on the contingency. For example, size and structuring are positively correlated and structuring has a positive slope in a regression on size (Child 1975). This slope may be used as the empirical estimate of the line of fit. However, a preferable approach is to take a subsample of the best-performing organizations and use their regression slope as the estimate of the fit line. Being the high performers, more of them should be in fit than for the sample as a whole, which would contain more organizations that are in misfit, thereby lowering the performance of the whole sample.

Subgroup regression takes the regression line of the high-performing subsample, the fits, and then compares it with the regression line for the low-performing subsample, the misfits. The hypothesis is that these two regression lines will be significantly different. The regression lines are hypothesized to differ because the misfits lie away from the fit line. The regression line is therefore expected to differ in either slope coefficient, or constant term, or both. For example, Child (1975, p. 21, Figure 1) found that the regression line of the low-performing firms had a different slope and constant (i.e., intercept) than the high-performing firms in regressions of specialization on size. This shows that the low-performing firms, the misfits, lie away from the fit line. Specifically, the misfits are less specialized than the fits at large size and are more specialized than the fits at small size (Child 1975, p. 21, Figure 1). This illustrates how subgroup regression analysis can be used to show a relationship between fit and performance.

The two regression lines of the fits and the misfits, however, cross over each other at a lowish size point (Child 1975, p. 21, Figure 1). This might seem to mean that at the point of intersection fit and misfit are the same, so that the structure both fits and misfits that level of the contingency variable. Clearly that would be impossible, or would contradict the ideas of fit and misfit. However, there is really no cross over, the appearance of such is an artifact of the regression technique. The regression line creates a continuum connecting disparate data points. If the misfits to low size are above the regression line of the fits and the misfits to high size are below that line, then the regression line of the misfits will intersect that of the fits. The portion of the misfit regression line that appears to cross over the fit line is just an imaginary line achieved by connecting up the misfits on either side of the fit line. In such a scenario there is no actual crossing of a line of fits and misfits; there is no structural level that is both a fit and a misfit. There are reasons for believing the conjecture about the position of the misfits, as to where they are above and below the fit line, so that this interpretation gains credence.

Child (1975, p. 21, Figure 1) found that the regression line of structure on the size contingency for the high-performing subgroup was steeper than that of the low-performing subgroup. Moreover, the low-performing subgroup had a higher positive intercept than the high-performing group. The result was that the two lines intersected toward the lower level of the contingency variable. Yet it is reasonable to hold that positive intercepts are false. Certainly their theoretical meaningfulness is problematic. A positive intercept means that when size is zero, the organization has a structure. Thus despite having no employees, the organization nevertheless has specialized functions that are occupied by people! The functional specialization scale measures the extent to which each specialization is performed by at least one full-time person (Pugh et al. 1968), so it would have to score zero if there were no employees in the organization. Thus the fit line of structure on size is theoretically meaningful only if structure is zero when size is zero, that is, the fit line goes through the origin (0, 0). (A case could be made that structure should become positive only when there are a number of employees, so that, technically speaking, the intercept of the regression of structure on size is negative. However, for simplicity we will assume an intercept of zero, that is, the fit line passes through the origin. Even if the intercept is actually negative, the following argument holds and so the assumption being made is conservative.)

If the true fit line goes through the origin, then, at lower levels of the contingency, substantial misfits would have to lie above the true fit line due to the restricted space below the line. Similarly, at higher levels of the contingency, substantial misfits would have to lie below the true fit line due to the restricted space for misfits above it. Therefore, at the extremes of the contingencies, misfits would tend to be toward the middle of the structural variable. Regressions are very sensitive to such outliers, therefore the slope of the misfits would be shallower than the slope of the fits and also the intercept of the misfits would tend to be higher than that of fits. Thus, given that the misfits have a regression line with a shallower slope and a higher intercept than the true fit line, the low-performing subgroup would have a shallower slope and a higher intercept than the high-performing subgroup. Therefore their two regression lines would intersect, yielding the observed finding

(Child 1975, p. 21, Figure 1).

While the observed differences in the regression slopes between the low- and high-performing subgroups capture the pattern of the differences between the misfits and the fits, they understate those differences. The low-performing subgroup would tend to be contaminated to some degree by fits, because the low-performing subgroup is those organizations that are only below average performance and not just the lowest performers. Therefore the true misfit line would be of even shallower slope and more positive intercept than the observed regression line of the low-performing organizations. Similarly, the high-performing subgroup would tend to be contaminated to some degree by misfits, because the high-performing subgroup is those organizations that are only above average performance. Therefore the true fit line would be of even steeper slope and less positive intercept than the observed regression line of the high-performing organizations.

Given that, as we have seen, positive intercepts of the fit line make little theoretical sense, the fit line should go through the origin, so its slope should be steeper. Therefore the observed positive intercept of the high-performing subgroup may be artifactual. The slope of the fit line could be steeper than that found in the regression analysis. Researchers should be aware of this possibility when making their interpretations of regression results. The empirical regression results should not dissuade us from theoretically meaningful fit lines, such as those that go through the origin. Similarly, if true fit lines are steeper than the regression lines of high-performing subgroups, then it becomes feasible to hold that they may have a slope of 1 as is postulated by some theoretical approaches to specifying the fit line (Alexander and Randolph 1985; Keller 1994). In summary, postulating that the fit line goes through the origin is more theoretically meaningful and explains the pattern of the misfits, including their apparent cross-over of the fits.

Also, if the fit line is steeper than the high-performance regression and the misfit line is shallower than the low-performance regression, then the comparison of these two subgroups understates the magnitude of the difference between the fits and misfits in slopes (and also intercepts). Thus the difference in slopes (or intercepts) might be found in some studies to be small and “not significant,” even where the fits differ substantially from the misfits, leading to the erroneous conclusion of no relationship between fit and performance.

Another potential weakness of the subgroup regression analysis is that the misfits could all lie away from the fit line but yet there could be no difference in the regression lines. Logically, misfits can be above or below the fit line. If the misfits are both above and below the fit line, then their regression line could be identical to the fit line, that is, have the same slope and constant coefficient. In such a situation, however, the correlation coefficient of the misfit group would be lower than that of the fits, because the misfits are scattered farther away from the fit line. One might be able to confirm this interpretation by showing that the misfits can be partitioned into two groups: one with a regression line above the fit line and one below. The correlation of these two new regressions would be greater than that of the rather fuzzy line formed from all the misfits scattered on either side of the fit line. Thus if there is a fit line in the data, then subgroup regressions should be able to show that it differs from the misfits by comparing high-performing with low-performing organizations, though sometimes supplemental correlational analysis may be required to help in the verification.

Correlations

Correlations may also be used as the main tool in a subgroup analysis, by splitting the sample into low- versus high-performing organizations and correlating the contingency and structural variables within each subgroup (e.g., Khandwalla 1973, p. 490, Table 2). Again, the lower-performing subgroup is expected to have a lower correlation between the contingency and the organizational structure than the high-performing subgroup, because the misfits are scattered around the fit line. There is also the point that higher correlations indicate a higher regression slope (because correlation coefficients and regression slopes are definitionally connected). Thus higher correlations provide indirect evidence of differences in slopes and so the analysis becomes a subtle form of the subgroup regression analysis discussed above. The disadvantage of subgroup correlational analysis, however, is that if all the misfits lay on one side of the fit line, then they could have the same or an even higher correlation than the fits. In such a case, however, a supplementary regression analysis would show that the misfits had a different slope or constant than the fits. Thus correlational analysis may need to be supplemented by regression analysis.

An alternative correlational method is to split the sample into subgroups of low versus high levels of the contingency variable and then correlate structure and performance within each subgroup. Fit is supported by demonstrating that there are statistically significant differences between the subgroups, produced by the correlation being positive for one subgroup and negative for the other subgroup (Argote 1982, p. 430, Table 2).

Regression Analysis

In regression analysis, the effect of fit on performance is assessed by regressing performance on fit. Fit may be operationalized as a congruence term, so that the main effect of fit on performance is assessed. Alternatively, fit may be operationalized as an interaction term, so that a moderator effect is assessed. Either way, the effect of other causes of performance may be controlled by including them in the regression alongside fit (e.g., Hamilton and Shergill 1992 p. 106, Table 5).

Main Effect Regression Analysis

In main effect regression analysis, fit is operationalized as a single variable taking two or more values, such as fit or misfit. There may be more than one combination of the levels of the contingency and structural variables that constitute a fit, for example, a functional structure fits very low diversity and a divisional structure fits diversified strategies (Hamilton and Shergill 1992, p. 99, Figure 2). Similarly, there may be more than one combination of the levels of the contingency and structural variables that constitute a misfit, for example, a functional structure misfits diversified strategies and a divisional structure misfits very low diversity (Donaldson 1987, p. 8, Figure 4). An advantage of this approach (relative to moderated regression discussed below) is that the fit term operationalizes the idea of fit as congruency. Each of the combinations of the levels of the contingency and structural variables that constitutes a fit is a state of congruence between contingency and structure, that is, a match of a level of structural variable to a level of the contingency variable. Similarly, each of the combinations of levels of the contingency and structural variables that constitutes a misfit is a state of incongruence between contingency and structure, that is, a mismatch of a level of structural variable to a level of the contingency variable. The effect of fit on performance is empirically assessed by testing whether the fit term shows a positive effect, that is, whether there is a main effect of fit on performance.

Moderated Regression Analysis

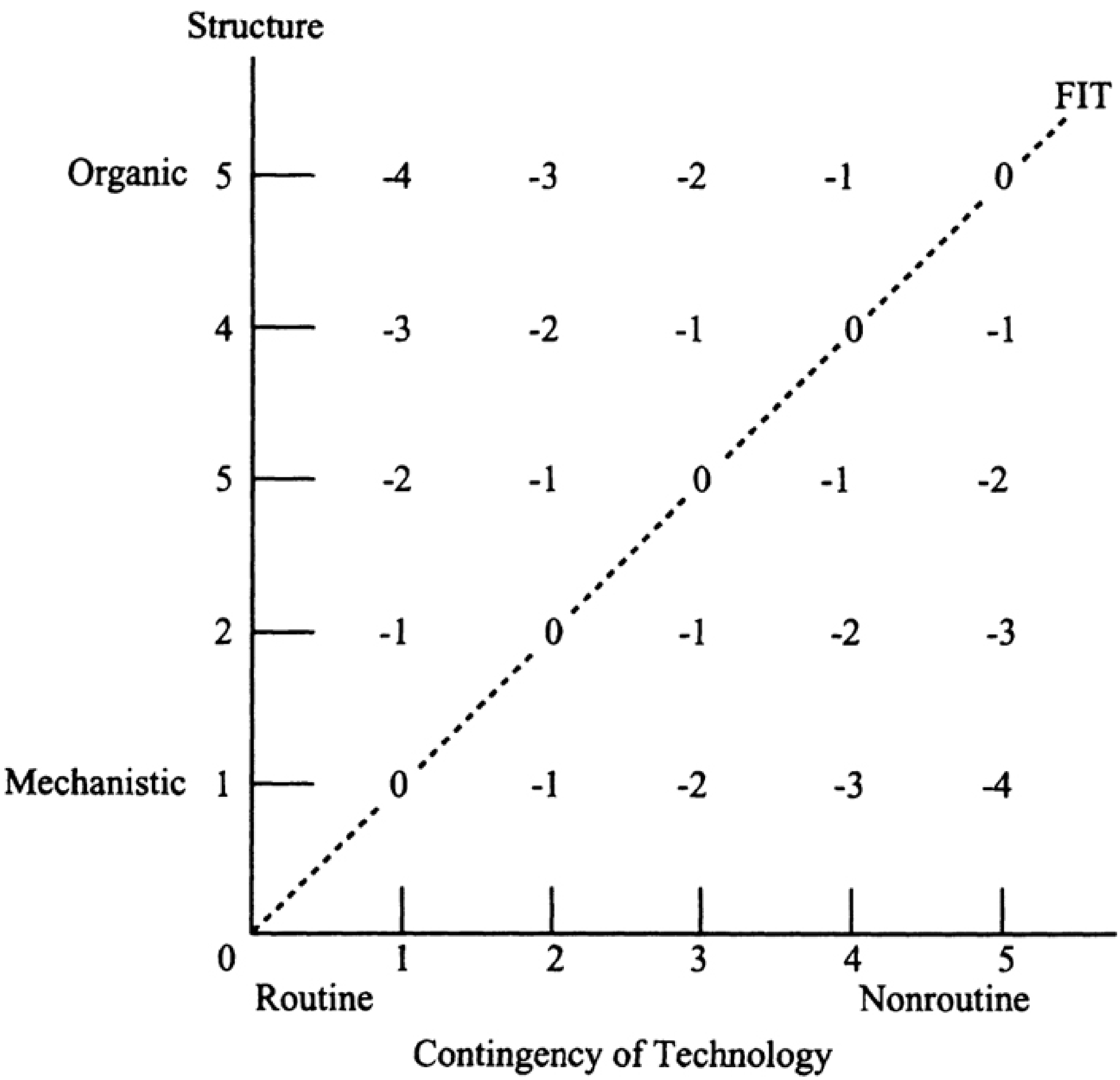
In moderated regression analysis, fit is represented by a multiplicative interaction term, that is, the contingency multiplied by the organization structure (e.g., size times structuring). Organizational performance is regressed onto this interaction term to see the magnitude of the slope coefficient. A slope significantly different from zero is taken to indicate an effect of fit on performance (Hill, Hitt, and Hoskisson 1992; Venkatraman

1989). Alternatively, the amount of performance variance explained by the interaction term is compared with that explained by the main effects of its two constituent variables, the contingency and the structure. If there is a significant increase from the interaction, then that is taken as evidence for an effect of fit on performance (Argote 1982, p. 429, Table 1). The problem is that, as discussed above, a multiplicative interaction term does not reflect the concept of fit as congruence and so it is not an operationalization of fit as that concept has been meant in contingency theory research. Therefore researchers wishing to test for the traditional type of fit should avoid moderated regression analysis and instead use one of the other techniques, such as main effect regression or subgroup analysis.

Deviation Analysis

In deviation analysis the degree of misfit of an organization is measured by its distance from the fit line. This deviation could be from a theoretically given fit line. For instance, Alexander and Randolph (1985) and Keller (1994) define fit as a line in which the level of the structural variable equals that of the contingency variable, that is, it passes through the origin and has a slope of 45 degrees to the horizontal (see Figure 7.2). The contingency and structural variables each range from 1 to 5 in levels. A mechanistic structure (i.e., structure level 1) fits a routine level of the technology contingency (i.e., technology level 1). In contrast, an organic structure (i.e., structure level 5) fits a nonroutine technology (i.e., technology level 5). For every increase of one level in technology, the structure needs to increase by one level in order for it to fit. A one-unit deviation from the fit line, that is, the mildest degree of misfit, reduces performance by one unit to −1. The greatest misfit possible is a deviation of four units, which reduces performance by four units to −4. Thus the greater the deviation, the greater the misfit, and so the lower the performance. The level of performance produced by each point of fit or misfit in the two-dimensional space is given *a priori.* In contrast, where the fit line is defined empirically by regression, then the misfit is a residual from that regression (Pennings 1987).

Figure 7.2. Misfit and Performance



A variant of deviation analysis is to measure the degree of misfit by the Euclidean distance formula. Van de Ven and Drazin (1985, pp. 350–351) define the Euclidean distance as the distance between the actual score of an organization on a structural dimension and the ideal score that the organization would require to be in fit with its level of the contingency variable. This distance is then squared for each structural dimension and then added to the squared deviations scores of all the other structural dimensions for that organization. Finally, the square root is taken. Thus the Euclidean distance is the sum of all the deviations across all the structural dimensions. The Euclidean distance for an organization measures its degree of misfit. This Euclidean distance can be correlated with performance to test the hypothesis that misfit is negatively correlated with performance.

The deviation score has the advantage of providing a measure of misfit for each organization, which can be correlated with the performance of each organization to yield a direct estimate of the strength of the relationship between fit and performance. However, the deviation score is a difference score, between the ideal level of the organizational structure that is required to fit the contingency and the actual level of that structure. Therefore it is prone to low reliability, as will be discussed below (in Chapter 8). Thus the correlation between fit and performance tends to understate the true effect of fit on performance. Moreover, the fits are to a few ideal profiles, rather than to a line of many fits (Drazin and Van de Ven 1985, pp. 532–534). Therefore many points on a fit line would lie away from the few, ideal profile fits and so be treated as misfits, thereby contaminating the analysis of fit and performance (as discussed for configurations in Chapter 5).

Overall, the discussion of methodological issues has suggested the advantages and disadvantages of various approaches. By using more than one approach, the analyst may avoid the pitfalls inherent in any one approach and reach a sounder conclusion.

Conclusions

Fit is central to contingency theory and so is receiving increasing study in empirical research. The idea that fit raises performance moves beyond being an empty tautology by becoming more specific about which organizational structures fit which contingencies.

Fit is the congruence between the organizational structure and its contingency. The line of fit may be straight or curved. The empirical tests for fit involve showing that deviations from the fit line cause lower performance. Fit as traditionally understood in contingency theory is not captured by a multiplicative interaction term.

Fit is a line of iso-performance in contingency theory research, in that each point on the line produces the same performance as any other point. Research fails to support the notion of equifinality. Equifinality would be evidence for choice only if structures yielding the same performance exist at the same level of the contingency. If they exist for different levels of the contingency, then the organization may be constrained by its level on that contingency so that there is no choice.

Whereas it has been suggested previously that there are three concepts of fit: selection, interaction, and systems, these would be better reconceptualized as managerial decision, congruence, and multifit, respectively. Multiple fits can be combined by adding them together to produce the total effect on performance of multiple fits. Conflicting contingencies can be handled within this additive model by subtracting the structural prescriptions of one contingency from another to yield a net effect.

The process whereby fit is identified may be initially driven by either theory or data. Either way, fit needs a theoretical rationale and empirical validation. Causal inference is aided by using a research design in which fit temporally precedes performance, and other causes of performance are controlled. There are several techniques for empirically demonstrating fit. These include subgroup analyses, regression analyses, and deviation analysis. The characteristics of each have been discussed.

- contingency theory
- regression
- subset analysis
- organizational fit
- regression analysis
- organizational structure
- performance

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