

HOW FIRMS CONTRACT —A LONGITUDINAL STUDY OF THE EFFECTS OF DOWNSIZING ON FIRM EMPLOYMENT STRUCTURES

ABSTRACT

Two key aspects of organizational change are organizational growth and organizational contraction. There are various models of organizational growth. However, we still lack an adequate research base or a theory of how firms contract. Utilizing a data base of all larger private sector firms in Australia during the 1990s, this paper contributes to developing a model of 'How firms contract'. Associated with this theory-building orientation, the paper examines the delayering hypothesis versus the "myth of managerial downsizing" hypothesis associated with Gordon (1996). Second, the peripheralization hypothesis is discussed. This latter hypothesis states that during downsizing there tends to be direct substitution of temporary or part-time employees for full-time, permanent employees. The paper concludes that Gordon was half-right. For the first phase of downsizing: there are only weak systematic linkages between the downsizing of employees and managers, resulting in an increasing proportion of managers at the level of the firm. However, there clearly is a lag effect, such that during the latter phase of downsizing (three years into the process), managers are strongly related to workforce reductions. The peripheralization hypothesis is not supported – during all phases of downsizing there is no clear pattern of direct substitution of temporary or part-time employees for full-time workers.

INTRODUCTION

Two key aspects of organizational change are organizational growth and organizational contraction. There are various models of organizational growth. The best known model suggesting five phases of growth was developed by Greiner in the 1970s (Greiner, 1972). However, we still lack an adequate research base or a theory of how firms contract. There is some agreement that contraction is not the reverse of growth and that contraction will usually follow ideal type phases (Robbins & Barnwell, 1994:410–413). It had been expected that the downsizing literature and research would help to generate some light on these issues, but the problem has been that most of the downsizing research has been cross-sectional and not longitudinal—longitudinal studies are rare.

The research reported here is part of a broader research agenda examining downsizing from a longitudinal perspective in various countries. In this paper we focus on reporting some results from the Australian Longitudinal Data Base. The research team has built up a data base of all larger private sector firms in Australia across the decade of the 1990s. This unique data base allows us to examine the downsizing behaviour of firms for a broad range of variables.

The paper is part theory-testing and part theory-building. We examine two key issues—what do firms actually do with managers and administrators during downsizing? How do firms use managers in this type of change context? There are two contrasting hypotheses here—the delaying hypothesis which states that downsizing is usually accompanied by delaying (i.e. stripping out layers of management and administration). In contrast, there is a “myth of managerial downsizing” hypothesis associated with Gordon (1996), which asserts that the administrative component of firms grows during downsizing.

The second key issue that this paper addresses is the peripheralization hypothesis. This hypothesis states that during downsizing there tends to be direct substitution of temporary or part-time employees for full-time, permanent employees. We deal with this issue

briefly for reasons of space. The primary theory-testing issue relates to the nature of managerial downsizing.

At the theory-building level, we wish to contribute to the discussion of developing a model of 'How firms contract'. We consider that our data-base provides a unique potential insight into this issue. In this paper, we have not attempted to focus on the issue of corporate performance, that is, what distinguishes successful downsizers from unsuccessful downsizers and the limits to downsizing as a restructuring strategy. Some of these issues are addressed in other research papers (see Littler, Kabanoff, Palmer, and Brown, 1999).

LITERATURE REVIEW

1) Theorizing How Firms Contract

In general, we understand something of organizational growth dynamics and can relate that understanding to the history of the firm and to (some) current developments. When organisations grow, they are likely to pass through a series of stages leading to identifiable outcomes including divisionalisation, specialisation and increasing the number of boundary-spanning units (Greiner, 1972; Cameron et al, 1993). When organisations downsize, we do not yet understand the dynamics. We can state the negatives—is not necessarily the dynamics of decline: this should be seen as a separate trajectory of change. Nor is it a question of growth in reverse. The classic paper that fractured this assumption was the study by Freeman & Hannan (1975). From the perspective of the 1970s, these authors argued that:

The very large empirical literature on the relationship of size and administrative intensity is almost wholly cross-sectional. As a result this research tradition has depended heavily on the assumption that the relations are symmetric in growth and decline(227).

Freeman & Hannan conclude from a study of school districts over time that the phases of change in growth and contraction are different. They advance a “featherbedding

hypothesis” that the administrative “component tends to increase on the upswings but decreases less on the downswings” (227) because cutbacks in the administrative component are “more costly in the short-run for decision-makers than over-staffing” (217).

The work of Ford (1980) replicated Freeman & Hannan and reached similar conclusions.

More recently William McKinley has extensively pursued the issue of organizational decline and administrative intensity (McKinley, 1987, 1992, 1993). In his 1987 study of manufacturing firms McKinley argues that the greater the organizational tendency towards decline, the less positive the relationship between technical and structural complexity and administrative intensity.” (87). In common with previous researchers, McKinley concludes that “knowledge gained from studying growing organizations does not generalize well to declining ones” (102). In other words, we require some separate, but linked, theory of how firms contract. Much of the earlier literature has focussed on ‘decline’ and part of the theoretical problem is that downsizing may indicate decline and non-adaptation or it may indicate a proactive strategy. Downsizing theorists have not avoided these conceptual problems beyond the verbal level.

2) The Myth Of Managerial Downsizing?

Part of the argument on how firms contract involves the size of the administrative component. This has a contemporary counterpart in relation to the paradox of managerial downsizing or delayering. The evidence for the extensive downsizing of management is mixed. Gordon (1996) has emphasized the problem of reconciling aggregate U.S. data on the *growth* in managerial jobs with media accounts of middle manager dissection. As he puts it: there is a “myth of managerial downsizing” (Gordon, 1996, 1; Tharenou, 1997).

In his widely-cited book, Gordon sets out to “explode(s) the widespread myth that in the 1990s, after a decade of downsizing, U.S. corporations have pared their bureaucracies and are now slim and trim – free of fat and waste.” (34). Instead, he argues that US

corporations have a “bureaucratic burden” of unnecessary supervisory and managerial staff “which has been growing, not contracting, through the mid-1990s” (35). This bureaucratic burden is so large that “It roughly equaled the national population of Australia.” (35).

Comprehensive statistical data on delayering is limited. Nevertheless, in the conditions of rapid change in the 1990s, there is some evidence that delayering and downsizing has occurred simultaneously. For example, a British Institute of Management survey based on the responses of over 1,000 middle managers and 150 employers conducted in 1992 concluded that “the evidence for delayering is overwhelming”. When asked if the respondent’s organisation had engaged in a delayering or similar restructuring exercise in the last five years, 81 per cent of organisations responded in the affirmative, with the proportion increasing in line with size of organisation (Wheatley, 1992: 15). In 1995/6 we conducted surveys in Australia, New Zealand and South Africa on delayering trends in organizations. Our survey results indicated much more extensive delayering than we expected: 44% of organizations in Australia had delayed over the preceding two years. The figures were slightly lower for New Zealand. The South African data indicated that 46% of organisations had attempted a strategy of cutting layers of managers. For all three countries, middle managers were predominantly the target of these cuts.

Set against these data are others which suggest the reverse of delayering and managerial downsizing: the proportion of managers and administrators in the Australian and American workforces, for example, has actually increased in recent years. We assessed the aggregate proportion of managers and administrators in the Australian non-farm labour force in 1994 based on census data. This indicated that the ratio of managers/administrators had increased from 5.4% in 1981 to 6.8% in 1991 (Littler, Bramble & McDonald, 1994, Table 2: 19)

American data tell a similar story, with the number of managers in the public and private sectors growing by 38 per cent (from 10.8 to 14.8 million) between 1983 and 1989, twice

the rate of growth of the workforce as a whole (Levinson, 1990: 238). As a result, the number of employees relative to the number of managers fell from 8.4 to 6.9. By industry sector, wholesale trade was the only area to record a decrease in the proportion of managers in the 1980s. The ratio of managers to non-managerial employees in durable goods manufacturing increased from 10 per cent to 12.1 per cent, in non durable goods from 9.9 per cent to 11.6 per cent, and there was also a significant increase in management numbers in construction and transportation (Levinson, 1990: 239). Spans of control, therefore, appear to have decreased, not increased.

Levinson (1990) is one author who has critically considered explanations for the growth of management numbers in the United States over the past decade and suggests some factors that might be responsible. The growth of public-sector employment in the United States in the 1980s is not a good explanation: the bulk of the increase in management jobs came from the private sector, with particularly sharp increases in sectors entirely independent of government, such as marketing, property and real estate, where the number of managers increased by between one-third and one-half. Job title inflation is another potential explanation, but this argument is undermined by the fact that managerial wages grew at a slightly faster rate than those for non-managerial employees, and the average educational attainment of managers also increased, suggesting that the position of 'manager' has not been subject to deskilling.

A further explanation is the long-term decline in demand for low-skilled manual workers relative to all other occupations, a factor that would explain increasing proportions of managerial staff. Overall, however, Levinson concludes that the most likely cause has been the growth of complexity accompanying the growth of inputs into the average production process (Levinson, 1990: 240). Complexity of operations means that managerial staff are still required in large numbers to plan and administer (Littler, Bramble, & McDonald, 1994).

Nevertheless, the paradox of managerial downsizing remains. To our knowledge all the recent research on the subject has been cross sectional or at the aggregate level. There is none that examines the processes longitudinally. Clearly, we can obtain further insight into the paradox of managerial downsizing by tracking it across time within the firm.

3) Downsizing and Peripheralization

This paper focuses on the issue of employer labour use strategies in relation to contraction of the organization. One reason for taking organizational size as an independent variable is that it is a primary management problem. Except in a steady state situation, all managers have to cope with decision-making in the context of growth or contraction, or the expectation of such. Traditionally, this has involved a lag effect—loss of market share was followed by adjustment of the workforce after a period. During the 1990s the argument is that “companies must accept continuous readjustment, as turbulent product markets, rapid changes in technology, and global competition force them to accept flexible workforce arrangements” (Gannon, 1995: 296). This continuous workforce readjustment model (the flexible firm, or core and ring strategy) drives firms towards a proportionate increase in the peripheral elements of their workforces. (Pollert, 1991). In relation to trajectories of downsizing this implies that there will be direct substitution of permanent full-time employees by temporary or part-time employees¹. We have termed this argument the peripheralization hypothesis.

HYPOTHESES

Given the above brief review of the literature, the primary hypotheses we are concerned with in this paper are set out below:-

H1: Corporate downsizing and the proportion of the firm’s workforce employed as managers and administrators are negatively related. This is the null hypothesis because it is the opposite of Freeman & Hannan’s “featherbedding hypothesis” (see above). We assume that one implication of Gordon’s “myth of managerial downsizing” would be the positive version of Hypothesis 1.

H2: Corporate downsizing and the proportion of the firm's workforce employed as peripheral workers (part-time and temporary) are positively related.

The corollary of H2 is that the proportion of the firm's workforce employed as permanent full-time workers will decline with downsizing.

H3: The effects of downsizing on the firm's employment structure will be consistent across all phases of downsizing.

Hypothesis 3 above is the null hypothesis because our view is that how firms contract follows specific pathways.

METHODOLOGY

1)Data-Set

In the United States the Equal Employment Opportunity Commission collects workforce data from private employers annually and numerates employees by occupational category, gender and race. The parallel agency with similar statutory functions in Australia is the Affirmative Action Agency (AAA). Each year the AAA is responsible for the distribution and collation of reports to all Australian private sector organisations with more than 100 employees. These reports provide details of organizations' total workforce by occupation, by gender, and by employment status (part-time, full-time and temporary). Note that the primary reporting level of the AAA is the organization not the establishment.

The AAA did not become operational until 1989. Therefore the Australian Longitudinal Data Set cannot extend back as far as US data. To illustrate response rates: For 1993 approximately 2,081 reports had been submitted to the Agency. In the 1994 reporting year the Agency received 2,175 reports from private sector organisations (94.8% compliance) and in the 1995 reporting year it received 2,165 reports (96.7% compliance). These response rates constitute a comprehensive coverage. In addition, we checked back with employers and with other data-bases (such as the IBIS data-base) to clarify some data. The revised and corroborated database is referred to as the "Australian Longitudinal Data Set".

The population of firms is a shifting one and some companies ceased operations during the six year period and some new companies were established after 1990. Only those companies which appeared across the six years were included in the data reported here: this amounted to 1,228 companies.

The summarised and tabulated data collected in this way has created a unique Australian database of these 1,228 companies. It is unique because of the ability it affords to be able to focus on individual company/organisation-level restructuring, to identify industry trends, its ability to be continuously updated, and its longitudinal approach. The AAA data-base offers the capacity to approach questions concerning employers' use of managerial labour, casual and part-time labour, employment contraction and growth from two angles rarely empirically available: longitudinal and firm-specific.

This paper does not analyse the industry effects on how firms contract. In the entire AAA longitudinal database, 45% of firms in 1990 were manufacturing. This increased to 51% manufacturing for the analysis sub-sample of first phase downsizers in 1990 to 1992. Industry specific analyses will be the focus of forthcoming research.

2) Defining Downsizing

There is no theoretically agreed way to define 'downsizing'. Operationally it has been used to mean planned workforce reduction. Some researchers have placed no minimum levels on the workforce reduction. The problem with such lack of specification is that a firm faced with sustained skill shortages may register as 'downsized'. Other researchers have specified numerical boundaries. For example, Cascio (1998: 59) "arbitrarily chose 3% as the minimum level to be considered as significant downsizing". In this paper we have used 5% as the key numerical cut off. All firms in the Australian Longitudinal Data Set were classified as 'downsizers', 'upsizers' or 'stables'. Therefore, the cut offs for up/stable/down are >5%, 5% to -5%, <5% of workforce numbers.

The longitudinal data set allowed us to conduct a pathways type analysis. We examined the year by year pathways for all firms in the Australian Longitudinal Data Set. This analysis is simplified in the data presented here. In this paper we have divided the data into three phases (90–92, 92–94 and 94–95). This approach involved a certain loss of information but within acceptable limits. Thus, we have three potential phases of downsizing. For reasons of space the full pathways analysis is not reported here. Instead, we focus on the continuous downsizers – 551 firms in Phase 1, 218 organizations in Phase 2, reducing to 63 firms in Phase 3. In other words, we are examining ‘telescoped’ sub-samples of the population.

Given that we are focusing on general patterns of change and contraction, one key issue which arises is industry effects across the three sub-samples. In other words, are specific industries more likely to reveal repeated downsizing patterns. An examination of industry consistency across the three sub-samples revealed similar proportions. For example, Phase 1 sub-sample contains 51% manufacturing firms, Phase 2 sub-sample 52%, and Phase 3 sub-sample comprises 46% manufacturing firms.

3) Statistical Analysis

Descriptive statistics are detailed below in the initial sections of the Results for phase 1, phase 2 and phase 3 of downsizing. The descriptive statistics are useful in determining the basic categories that account for change in downsizing organisations, as well as those employment types that account for relatively little change.

The subsequent analyses utilise structural equation modelling. (Tabachnick & Fidell, 1996, Arbuckle, 1997). Structural equation modelling combines a variety of procedures underlying correlation/regression and analysis of variance and factor analysis, in part, or simultaneously, and therefore has a wide range of applications (Bollen & Long, 1993). Foremost among advantages of such a technique is its ability to evaluate; (i) relationships among the true variables of which their observed measurements are erroneous, (ii) interdependence or simultaneity of causation among observed variables and, (iii) where

unobserved variables may take salient roles (Goldberger & Duncan, 1973, Joreskog & Sorbom, 1989). In summary, structural equation modelling allows for a combination of regression with multiple independent and dependent variables and factor analysis in the identification of latent or unobserved variables.

Initial exploratory factor analyses showed several interesting patterns that was used to form an approximate model for testing using SEM. For reasons of space the exploratory factor analyses are not reported here. The results indicate close similarity to the SEM results. The exploratory factor analyses have been used to complement the formulation of more structured models for formal testing using the penultimate visual path analyses in structural equation modelling.

The data used in our analysis relates to a number of variables indicating changes in numbers of different types of employees (based on gender, management or employee, and labour status). Because of this, it is not possible to utilise predictive elements of regression, as clearly changes within and between organisations are both simultaneous and interdependent. However one of the straightforward uses of structural equation modelling is the identification of the population covariance structures. We use structural equation modelling in its simplest form, to estimate a model of interrelationships that best fit the data. In the presence of more developed theory, both inclusion of latent variables as indicated by observed variables and causal relationships between them would be possible. However, these analyses require only the modelling of a basic covariance structure between simultaneous and interdependent observed variables, and for that purpose a simple structural equation model is developed.

The technique is carried out using AMOS (Analysis of Moment Structures) version 3.6. A detailed explanation of AMOS and the basis behind estimating simple covariance models can be found in Arbuckle (1997). Missing data is also a consideration that has important consequences for structural equation modelling. However, the data used has no discernible missing data. Two stages in the analyses are important; model fit and the model covariance estimate results. Firstly it is important to check the fit of the model by

observing the model chi square. Many authors have reiterated the problematic nature of the chi square and recommend also using several fit indices to reassure fit permanency (Bollen & Long, 1993). The analyses report the chi square model for both independence and specified models, the Goodness of Fit, Adjusted Goodness of Fit, the Conditional Goodness of Fit Indices and the Root Mean Squared Error of Approximation.

The model covariance estimates reflected by linkages in the path diagrams will be considered in their standardised form as the correlation coefficients ranging in value from 0 to 1. Each of the models presented is reproduced and visually simplified by eliminating weak relationships in the model.

RESULTS

1) Descriptive Change Statistics: Australian Downsizing Firms 1990–1992

Our overall data set showed that 559 organisations have downsized in accordance to the criteria set out in the methodology section. A rigorous examination of extreme and multivariate outliers was undertaken to exclude eight dominating cases from the analyses. Table 1 below shows descriptive change statistics of 551 downsizing firms from 1990 to 1992 which constitutes phase 1 of the longitudinal analysis.

TABLE 1
Descriptive Change Statistics: Downsizing Organisations in Phase One
N = 551

	Females				Males				Diff in %1992 from 1990	Total Changes Within Status
	Mean Change	Adjusted Mean Changes*	Number of Changes	Percent of Total Change	Mean Change	Adjusted Mean Changes*	Number of Total Changes	Percent of Total Change		
Full Time Managers	-0.9	-1.2	-520	0.5	-8.3	-8.3	-4575	4.3	0.5	-5095
Full Time Employees	-40.3	-40.3	-22198	20.7	-119.2	-119.2	-65683	61.2	1.3	-87881
Part Time Employees	-1.1	-1.2	-581	0.5	-1.0	-2.0	-566	0.5	0.0	-1147
Casual Employees	-12.4	-15.7	-6806	6.3	-11.6	-15.8	-6373	5.9	-0.3	-13179
				28.0				71.9		
						Grand Total Changes#	-107359		Total Changes in Table 1	-107302

**Adjusted by elimination of organisations with zero changes because of zero numbers of specific employment type.*

Grand Total Changes are larger than Total Changes because of other employment types (e.g. part-time female managers) which are not discussed here. As can be seen, the numbers are negligible.

It can be seen that reduction in full time employees accounts for the most change in downsizing organisations in phase one. Male and female full time employees account for about 61% and 21% of the total changes, respectively. Male and female casual employees next contribute about 6% of the total changes each. Male full time managers account for about 4% of the total changes among downsizing organisations in phase one.

Two important groups are left out of the above account of reduction in employment types. Male and female part time employees do not significantly differ from an average of zero changes (males: $t = -1.711$, $df = 550$, $p = 0.088$, females: $t = -1.316$, $df = 550$, $p = 0.189$). Female full time managers have a very small mean change of -1 , accounting for just one half of a percent of all changes in this phase.

In summary, the descriptive statistics for phase 1 show the depth of downsizing by reductions in full time employees, with casuals and male full time managers having secondary roles. Part time employees enjoy stability, while female full time managers also have relative isolation from the impact of change.

An examination of an adjusted mean (column 2 in Table 1) based only on firms with non-zero numbers of employment types indicates no significant change to the statistics or conclusions drawn above.

2) Descriptive Change Statistics: Australian Downsizing Firms 1992–1994

Tracking through time, of the 564 phase one downsizing organisations, 225 organisations downsized again in the second phase over the course of 1992 to 1994. Seven extreme cases or multivariate outliers were eliminated from the sample leaving 218 organisations in the analysis. Table 2 below shows the descriptive change statistics for the second phase downsizers.

TABLE 2
Descriptive Change Statistics: Downsizing Organisations in Phase Two, 1992–94
N = 218

	Females					Males					Total Changes Within Status
	Mean Change	Adjusted Mean Changes*	Number of Changes	Percent of Total Change	Diff in %1994 from 1992	Mean Change	Adjusted Mean Changes*	Number of Total Changes	Percent of Total Change	Diff in %1994 from 1992	
Full Time Managers	-0.6	-0.7	-129	0.3	0.2	-12.4	-12.4	-2714	6.2	-0.2	-2843
Full Time Employees	-34.8	-34.8	-7586	17.2	0.2	-136.6	-136.6	-29789	67.6	-0.6	-37375
Part Time Employees	-1.5	-1.7	-324	0.7	0.2	-0.3	-0.5	-61	0.1	0.1	-385
Casual Employees	-11.5	-14.3	-2505	5.7	-0.3	-4.5	-5.8	-975	2.2	0.4	-3480
				23.9					76.1		
							Grand Total Changes**		-44080	Total Changes in Table 2	-44083

*Adjusted by elimination of organisations with zero changes because of zero numbers of specific employment type.

**Grand Total Changes are smaller than Total Changes because of the flow of other employment types which are not discussed here. As can be seen, the numbers are negligible.

The descriptive change statistics are repeated for the analyses on the second phase of downsizing. Observing the percentage of total change for each employment type in Table 2, high, low and non-contributors to the total changes from 1992 to 1994 can be assessed.

Full time employees again contribute the highest amounts of decline with about 68% for males and 17% for females. The next largest amount of changes in the second phase of downsizing are male full time managers with about 6% . Female casual employees also account for about 6% of the total changes, with male casual employees showing just above 2% of the total changes (with a sample of 218 this latter percentage would include zero within a 95% confidence interval).

As in Phase 1, part time employees show no significant difference from a mean change of zero (males: $t = -0.785$, $df = 217$, $p = 0.433$, females: $t = -1.713$, $df = 217$, $p = 0.088$).

Female full time managers also do not significantly differ from a mean change of zero ($t = -1.418$, $df = 217$, $p = 0.158$).

3) Descriptive Change Statistics: Australian Downsizing Firms 1994–1995

Tracking through time to the third phase of downsizing, the data set is significantly reduced. There are 63 firms that have continuously downsized over the period 1990–95.

The descriptive change statistics are set out in Table 3 below.

TABLE 3
Descriptive Change Statistics: Downsizing Organisations in Phase Three, 1994–95
N = 63

**Adjusted by elimination of organisations with zero changes because of zero numbers of specific*

	Females					Males					Total Changes Within Status
	Mean Change	Adjusted Mean Changes*	Number of Changes	Percent of Total Change	Dif in %1995 from 1994	Mean Change	Adjusted Mean Changes*	Number of Total Changes	Percent of Total Change	Dif in %1995 from 1994	
FullTime Managas	-1.1	-1.4	-71	1.0	0.0	-.222	-.222	-1400	196	-1.7	-1471
FullTime Employees	-10.4	-10.4	-668	9.2	0.6	-.658	-.658	-4144	58.1	1.3	-4802
PartTime Employees	-1.5	-1.8	-97	1.4	0.0	-.22	-.38	-141	2.0	-.02	-238
Casual Employees	-.33	-.37	-211	3.0	0.1	-.66	-.81	-411	5.8	-.01	-622
				145					855		
							Grand Total Changes**		-7133	Total Changes in Table X	-7133

employment type.

***Grand Total Changes are smaller than Total Changes because of the flow of other employment types which are not discussed here. As can be seen, the numbers are negligible.*

It will be seen from Table 3 that full time employees still account for the most change and are at most risk of losing their jobs. (58% for males and 9% for females). The processes are sharply decelerating, perhaps because the firms are reaching a determinate limit of employee numbers without which they cannot function. The obvious activities have been contracted out leaving the core functions.

However, the process of change for managers is accelerating by any measure; male managers now account for nearly 20% of the total change and the ratio of managers is dropping significantly. According to Table 3, managerial downsizing is a reality after five years of contraction. Female managers remain insulated indicating that during the context of downsizing, if nowhere else, affirmative action has a useful payoff.

Casual employees are still subject to workforce reductions (nearly 6% of change for males and 3% for females) but at decelerating rates for females. Again female and male part-time employees do not differ significantly from an average of zero changes.

In sum, during the third phase of firm processes of contraction, most processes of change affecting groups of employees are decelerating except for the impact on managers, which is sharply accelerating.

4) Structural Equation Modelling

The descriptive analyses above examined static information about the range of employment types. The multivariate analyses of changes in employment types in each of the first phases will provide information beyond that of the initial descriptive analyses. The use of structural equation modelling to estimate association between variables is one means of examining the systematic relationships between changes in employment types for each phase. The first model uses 551 organisations downsizing in phase one, initially described in Table 1.

The independence model tests the hypotheses that the variables in the structural equation are uncorrelated. This was rejected ($\chi^2 = 765.875$, $df = 28$, $p < 0.001$). The task of providing a well fitting model to the data, that may be used to assess the research hypotheses, was successful. The final model was not significant ($\chi^2 = 14.833$, $df = 13$, $p = 0.318$) indicating current model identification. The model fitted the data well, indicated by high goodness of fit indices (GFI = 0.993, AGFI = 0.981, CFI = 0.998), and low root mean squared error of approximations (RMS = 0.016).

The final model is presented in Figure 1.1. The models presented use the standardised covariance or correlations as measures of association and all correlations' 95% confidence intervals do not contain zero. Because of the large number of weak but significant associations in the final model, a visually simplified model presenting correlations of great or equal to 0.2 is presented in Figure 1.2.

FIGURE 1.1 Structural Equation Model of Association between Changes in Employment Types: Downsizing Organisations in Phase 1, Australia 1990–92

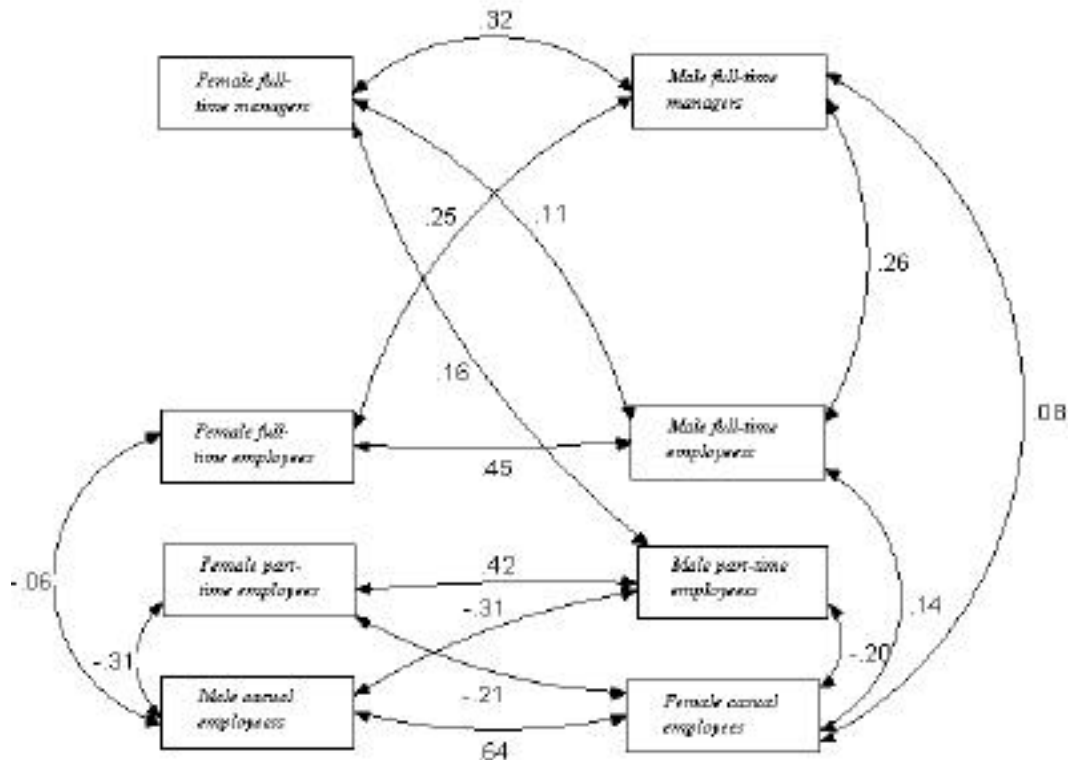
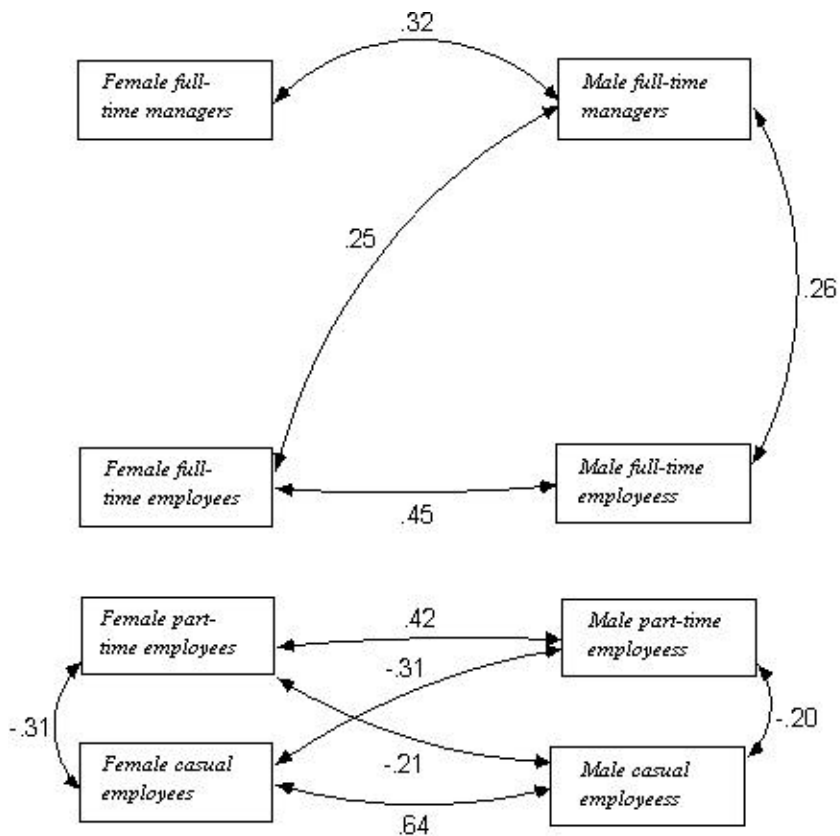


FIGURE 1.2 Visually Simplified ($r > 0.2$) Model of Association between Changes in Employment Types; Downsizing Organizations Phase 1



Identified associations reveal that systematic change occurs such that changes in one employment type is associated with changes in another employment type. An examination of the correlations in the model presented in Figure 2.2 reveals the strength of association between changes in employment types.

Several patterns are revealed by the analysis, all based on weak moderate change relationships. The first associates change in male and female managers ($r = 0.32$). The second set of correlations reveals a basic substitution pattern or negative relationship between part time employees and casual employees ranging from -0.2 to -0.31 . Critically, male full time managers have a weak association with male and female full time employees ($r = 0.26$ and 0.25 respectively).

It is also relevant to observe the de-linking of the peripheral components of the model from the core components including the managers. This is interpreted as differences between firms involving a strategy which downsizes primarily full time employees or casual employees, but not both.

Those organisations that downsized again in the second phase are examined. Again structural equation modelling is used to identify good estimates of association between changes in types of employment.

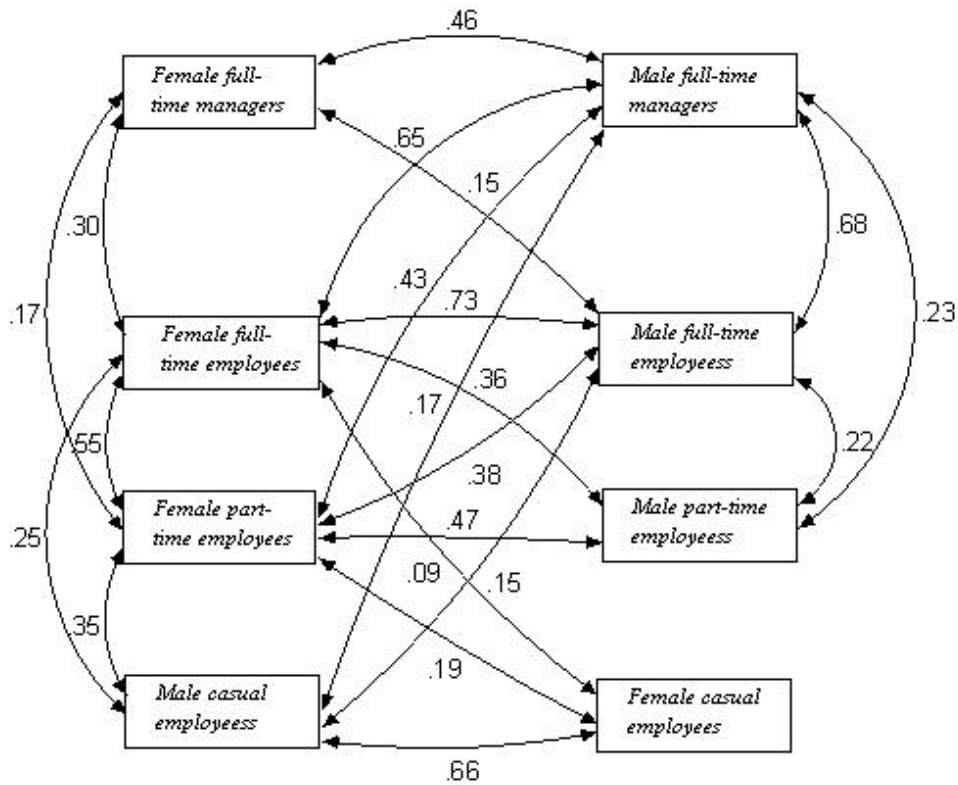
The independence model was rejected ($\chi^2 = 755.706$, $df = 28$, $p < 0.001$) meaning that we are able to provide justification for a model revealing associations between changes in employment types. After utilising the model chi square, various goodness of fit indices, modification indices, the final model was settled. The final model was insignificant ($\chi^2 = 10.326$, $df = 7$, $p = 0.171$) and fitted the data well ($GFI = 0.998$, $AGFI = 0.940$, $CFI = 0.995$, $RMS = 0.047$).

Figure 2.1 presents the final model, however visual simplification is necessary to allow easy observation of all but extremely weak components of the model. The visually

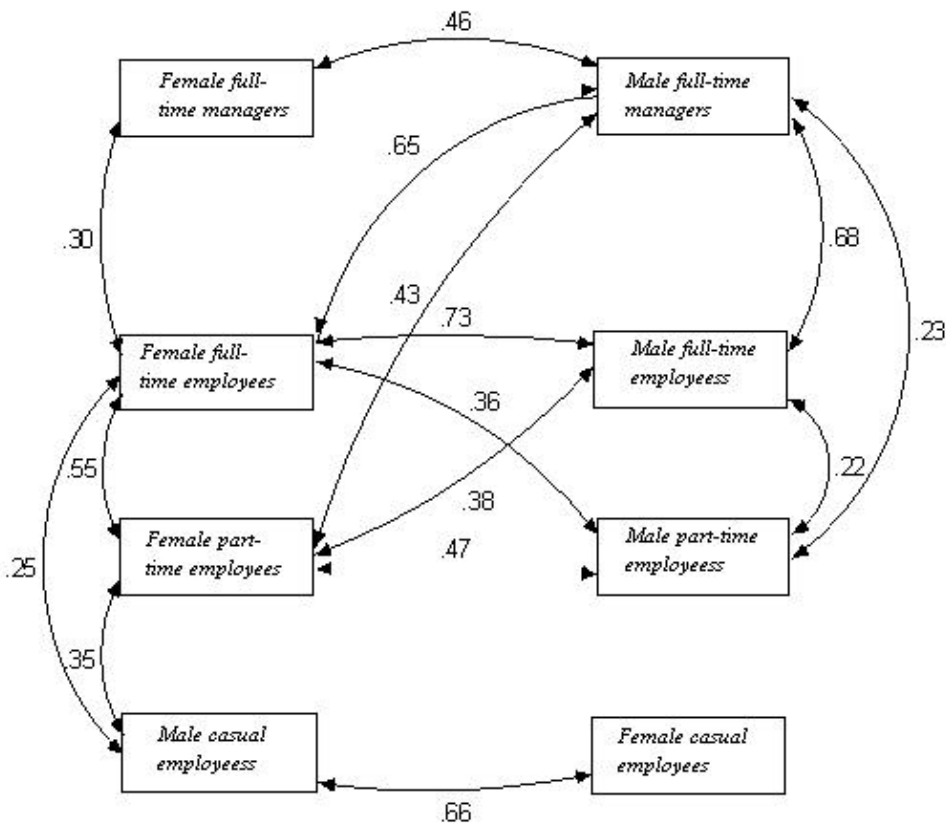
simplified model is presented in Figure 2.2. The final model reveals a complexity of systematic associations between changes in each of the employment types. A simplified interpretation is taken by focussing on the strong or moderate relationships.

Figure 2.4 indicates that changes to male full time managers are drawn into moderately strong association with changes in both male ($r = 0.68$) and female ($r = 0.65$) full time employees. Moderate associations are found between changes in male and female full time managers ($r = 0.46$), and between changes in female casual and part time employees ($r = 0.55$). The implications of some of these results are discussed in the following sections. It should be noted that the Phase 3 data set did not consist of enough firms ($n=63$) to permit structural equation modelling (Tabachnick & Fidell, 1996).

**FIGURE 2.1 Structural Equation Model of Association between Changes in Employment Types:
Downsizing Organisations in Phase 2, Australia, 1992–94**



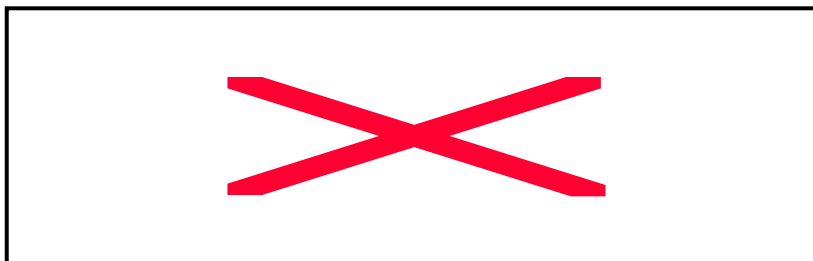
**FIGURE 2.2 Visually Simplified ($r > 0.2$) Model of Association between Changes in Employment
Types: Downsizing Organizations in Phase 2**



5) The Strength and Significance of Changes Between Downsizing Patterns in Phase One and Phase Two

In this section we consider the relationship between Phase one and Phase two downsizing. There are 28 possible estimations of associations between the eight employment type variables used in the structural equation model. Two well fitting models based on Phase one and Phase two of downsizing result in two sets of 28 estimated correlations. These 28 pairs of estimated correlations are taken as data for the analysis. The analysis will first examine the means of each set to consider possible variation in the average strengths of the models over time, with a paired samples t-test. This is then followed by a plot of the two sets, with the main feature a correlation between the two to test the strength and significance of any relationship between the systems in Phase one with the systems in Phase two.

Table 4 Mean Correlations for Each Downsizing Model



The descriptive presentation of the means (see Table 4) suggests that systematic structural associations increase as downsizing continues for a second phase. The paired samples t-test statistically tests the null hypothesis that the two means are from the same population, that is, their apparent difference is a matter of random variation. 1.96 times the standard error either side of the means will produce the 95% confidence interval. For the two means, these intervals clearly do not overlap, and this is reinforced by the significance of the paired samples t-test (mean difference $-.2107$, $t = -5.450$, $df = 27$, $p < 0.001$).

We conclude from this result that as downsizing moves from Phase one to Phase two, the systematic relationships significantly intensify. However, we are also interested to know

the strength of the relationship, that is, given Phase one associations, to what extent can we predict the Phase two systems?

The following figure, Figure 3, shows a simple plot of the Phase one estimated correlations against the Phase two estimates.

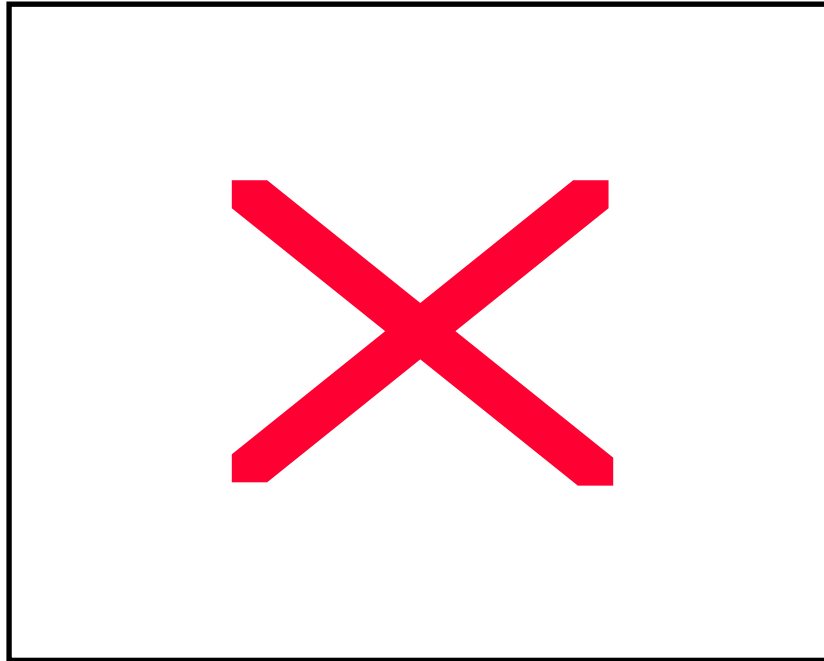


FIGURE 3. Plot of Phase one against Phase two Estimated Correlations.

The line of best fit based on least squares is also included in Figure 3. A distinct linear relationship can be seen. This is reflected by a significantly moderately strong correlation ($r=.59$, $p<.001$) between Phase one and Phase two estimated correlations. By squaring the correlation coefficient we are able to calculate an r squared of .35. In other words, knowing Phase one estimates accounts for 35% of the variation in the Phase two scores.

In sum, the results indicate two issues. Firstly there are significantly larger associations in the second phase than the first phase. Secondly, the linear relationship between the first and second phase is moderately strong. Despite the fact that Phase one associations

explain 35% of their significantly intensified partners in Phase two, there is still 65% of variation of Phase two associations unexplained. Our next section examines the changes between systems uncovered in the Phase one model and the Phase two model. These changes in the second model are expected to follow strong, intensifying relationships with the first phase model, but also some variation and change.

DISCUSSION

The descriptive statistics for the first phase of downsizing indicated that male and female full time employees were primarily at risk, with male and female casual employees taking smaller equal shares. Male full time managers suffered a mean change per firm of minus 8.3%, but an increasing ratio. Part time employees and female full time managers were relatively insulated from the effects of downsizing.

The descriptive analysis of the second phase downsizing sample revealed some significant differences. There was the continuing stability of part time employees and female full time managers. However, male full time employees were more at risk of job loss and male managers increased their exposure to risk. While male casual employees reduced their likelihood of job loss, no such reduction is found for female casual employees.

The descriptive statistics fall short of a comprehensive analysis of the patterns of relationships between changes in employment types. The models estimated from structural equation modelling allow us to examine the association between changes in employment types while controlling for all other labour type influences. The models reported fitted the data very well indicating the validity of such patterns.

The second model estimated the associations between changes in labour types for a smaller group of continuing downsizers in phase two. Several patterns were evident. First, strong relationships between male full time managers and male and female full time employees were found. Changes in male and female casual employees were also strongly

associated. Moderate associations link changes of male and female full time managers, male full time managers with female part time employees, male and female part time employees, and finally, female part time employees and full time employees.

In comparing the models from phase one to phase two, several interesting patterns can be discerned. Firstly, as already empirically demonstrated, there is an intensification of associations. This means that systematic relationships between changes in one type of labour and another are significantly increasing. This intensification falls primarily on the role of increasing changes and reductions in male full time managers increasingly associated with the continued downsizing of male and female full time workers. In phase two, male full time managers become entrenched in the systematic reduction of the core workforce.

The second most interesting pattern observed is found in the continued isolation of a system associating male and female casual employees, while at the same time revealing that while the periphery was de-linked from the core in the first phase, part time employees have become enmeshed in a complex array of associations with core components.

In summary, the empirical results indicate that male managers (the predominant numerical group) may be affected by downsizing in both phases. Despite being only weakly integrated into systematic downsizing of core workers in the first phase, male full time managers become heavily entrenched in systematic workforce reduction in the second and third phases of downsizing.

CONCLUSIONS

How do firms contract? Is there a clear trajectory of change across phases of corporate downsizing? First, downsizing is rarely a one off event which can be treated as a discrete episode. Downsizing is part of a continuous process of change and is frequently part of a cycle of downsizing. Our Australian survey data shows that over 44% of downsizing organisations in Australia downsized three or more times over the two-year period 1993–95 and 71% twice or more (Littler, 1998, 5). This implies that downsizing needs to

be considered, in part, as a process of contraction. The lean organization model suggests that downsizing is associated with delayering – middle managers are a significant target of change. Our longitudinal data indicates a more complex pattern. Managers despite the trends in delayering indicated by our survey data and the delayering rhetoric and apparent delayering logic are still the key core workforce. They apparently resist their own downsizing during processes of contraction and remain as the archetypal core workers for a period. (See Table 5).

Thus, Gordon's "myth of managerial downsizing" hypothesis is partly confirmed by our data—for the first phase of downsizing. There are only weak linkages between the downsizing of employees and managers, resulting in an increasing proportion of managers. However, there clearly is a lag effect, such that during the latter phase of downsizing (three years into the process), managers are strongly linked to the cuts to employees. In this sense, Gordon was half-right. This conclusion is important, because it is one of the few times in the downsizing literature that we have been able to track a key trajectory of change.

In relation to Hypothesis 2 – the increasing peripheralization hypothesis – then during phase 1 of downsizing, there is a clear de-linking of the peripheral workforce from full-time employees. This is interpreted as a strategy which downsizes primarily full time employees or casual employees, but not both. What happens in phase 2? There is still no clear pattern of direct substitution of temporary employees or part-time employees for full-time workers. Instead, there is a moderate positive relationship between full-time employees and part-timers, suggesting that the two categories of employees are reducing together.²

Table 5 Phases of Downsizing

Phase of Downsizing	Role of Managers	Full-time, permanent employees	Temporary Employees	Part-Time Employees
Phase 1 (Yrs. 1,2,3)	May be delaying & lean organization rhetoric. But managers maintain their position. Workloads increase.	Dramatic cuts in FT employees	Significant reductions in temporary employees, but no substitution effects. In some firms temporaries tend to be cut instead of full-time employees.	Relatively insulated from change. But there is some substitution between temporary employees and part-timers.
Phase 2 (Yrs. 3,4,5)	Managers more likely to become targets of systematic workforce reduction in the second phase of downsizing.	Significant cuts continue. Male FT employees more at risk of job loss than in Phase 1.	Female temporary employees continue to be cut. But still no substitution effect.	Relatively insulated from change.
Phase 3 (Yr. 6)	Downsizing of managers continues and accelerates sharply.	Significant cuts continue, but decelerate sharply. Limits to contraction set by core activities may be reached.	Decelerating cuts. But still no substitution effect.	Relatively insulated from change.

The phases of downsizing are summarized in an ideal type way in Table 5. This is based on all downsizing firms in our population. How firms contract is an issue which requires more research across several phases of change and which forms part of our ongoing research agenda. In addition there is a need to examine a broad array of modifying variables, such as industry and cross-country differences, which forms the basis of another paper. Finally, downsizing cannot always be considered a homogenous phenomenon and contingency variables in relation to downsizing need to be investigated (McKinley, 1993:3; Freeman & Cameron, 1993).

NOTES

1. The part-time category is used generally across most OECD economies, though with varying definitions of hours. However, the temporary dimension is more difficult because of national differences in definitions and data collection. For example, most Australian data relate to “casual employment” and is not strictly comparable with the U.S. or British use of “temporary employment” which tends to be a broader category.

According to Australian statistical definitions, casuals are those hired on an hourly basis. This includes seasonal and non-seasonal insecure employment. “Part-time employees” are determined as “those NOT defined as full-time”. Full-time employees are those who normally work the agreed or “award” (legally binding agreement) hours for a full-time employee in their occupation. “if agreed or award hours do not apply, full-time employees are those who usually work 35 hours or more a week.” “Part-time” is usually interpreted by public sector employers as “permanent part-time”, but in the private sector the definitions are less institutionalized and may include either temporary or permanent part-timers. For discussions of definitions of casual work, see Dawkins & Norris, 1990, and Romeyn, 1992. In this paper we have used “casual” and “temporary” as synonymous.

2. The reader should note that assessment of the peripheralization hypothesis and substitution effect could be affected by the nature of the sampling process. Specifically, firms which substituted employees within precise numerical limits would be categorised as “stables” and not “downsizers” and would, therefore, be excluded from the analysis.

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