Productivity innovation as a social movement: the case of Singapore

Check-Teck Foo and Kenneth Hall

Abstract Singapore is a small, densely populated and natural-resources-deficient country. There is an urgent need for the government to emphasize productivity improvements. This empirical study therefore investigates the Singapore's social movement on productivity innovation. Contrasting patterns of product moment correlations are found (training and productivity improvement practices) between the small (<100 employees) and large firms. The empirical findings also provide a measure of validation of Mintzberg's model of an innovative organization.

Keywords Innovation, social movement, productivity, size, bureaucracy, MBO, supervisors, training

To become a little economic dragon, such as Singapore... a country must get itself organized to compete.

(Thaurow, 1992)

Introduction

Independent for thirty-two years, with a 3 million, multi-racial (Chinese majority) population, People's Action Party (PAP)-led Singapore is seen by less-developed countries as a possible model for development. A tiny island colonized 177 years ago by Sir Stamford Raffles Singapore was originally no more than a fishing village. Yet over the last three decades and arguably over the last ten years Singapore has leapt forward to become noted for rapid social and economic progress. That scale of change would be unlikely without Singaporeans themselves also being consciously transformed socially, more particularly becoming more productivity conscious.

Last year was an important one for scholars who had been watching Singapore's productivity scene, for 1996 was the year of integration, transformation and change of the statutory board widely known among Singaporeans as the National Productivity Board (NPB). Singapore. The NPB had been the agency responsible for promoting productivity for more than a decade and a half. The passage of the Singapore Productivity and Standards Board Act through parliament saw the birth, on 17 April 1996, of a new statutory board, the PSB. The process of creating this new organizational entity is described in the PSB's own publication Standard News as follows:

[PSB] is a statutory board established... with the integration of the functions of the National Productivity Board and the Singapore Institute of Standards and Industrial Research and the takeover of the small and medium-sized enterprizes (SME) development function of the Economic Development Board (EDB).

The mission statement of the PSB remained very much one of productivity and is said to be "to raise productivity so as to enhance Singapore's competitiveness and
economic growth'. Heading the list of the major 'thrusts' of this statutory body (a reincarnation of the old NPB) is productivity promotion. The other five listed after it are manpower development, technology application, industry development, standards and quality and incentives management. What is even more interesting is the vision carved out for the PSB 'to be a leading player with a global perspective in matters related to productivity and standards'. Although still a vision of the newly created PSB, those aspiring words may serve as qualitative benchmarks of the progress made by Singapore in promoting productivity consciousness among her people. A Wall Street Journal article (1996) described productivity promotion in Singapore as a 'perpetual' campaign.

Background

Since October 1981 (Foo and Chan, 1990), there has been a continuing nation-wide 'Productivity Movement' in Singapore, aimed at inculcating a societal consciousness of productivity. This followed Singapore's second national plan of 1980. The first such plan (1960 - when unemployment was high and per capita income low) focused on job creation by concentrating on attracting multinational corporations and on export-oriented industries. The 1980 plan emphasized a restructuring of the economy by concentrating on higher value-added activities by increasing the output of technical manpower through a wage-correction scheme which increased wages dramatically, thereby doing away with many of the now undesired low-wage/low-skill jobs, and by increasing productivity via a number of initiatives, of which a productivity movement was one of the most important. Lee Kuan Yew, as the Prime Minister, personally opened the 'Productivity Month' with a speech entitled 'Productivity: who benefits?'.

which he concluded with 'It may take 15 to 20 years to get Singaporeans as productive as the average Japanese or Korean. A change in outlook cannot be achieved in a productivity month. It is only the beginning' (1982: 6). Singapore's per capita GNP has risen from less than US$ 500 in 1960 and by 1993 at US$18,500 was ahead of many OECD countries. Indeed, The Economist's publication "The World in 1993" put Singapore's GDP per head ahead of Britain's (US$17,300) (Straits Times, 1993b).

How has this happened? By sustained economic growth, which still continues even though Singapore is not now a cheap-labour economy (cheap labour is the more usual explanation for high growth in many of the East Asian countries). In 1993, with per capita GDP already leading that of the UK, Singapore's economy was continuing vigorous growth - at 7.1 per cent in the first quarter. The manufacturing sector's growth was ahead of this average figure at 7.6 per cent (Straits Times, 1993a). And, while there are many factors and forces at play, increasing productivity is the engine which propels much of this growth. Indeed, it takes only a few days in Singapore for a visitor to comprehend that productivity and economic growth have caught the imagination of the average Singaporean in a way that is not often found in the West, and that one is in the presence of a real social movement.

Productivity posters are seen in many public places, including schools, factories, airports and shops. The productivity message is reinforced in homes through prime-time television. Numerous courses, workshops, programmes, speeches, talks are regularly organized by Singapore's National Productivity Board. This situation provides a rare setting to investigate how organizations operating within such a milieu actually respond. Arguably, an intensive social movement in productivity is likely to cause organizations to be more productivity conscious. In the process, management is likely
to seek innovative approaches to improving productivity: for instance, a small firm may implement some modern management methods or a large firm may try to be more people oriented. The external environment engendered by the productivity movement may provide the stimulus for organizations to innovate in order to improve productivity.

This paper utilizes the unique Singaporean context of a social movement aimed at productivity enhancement to frame this inquiry into the innovative nature of organizations. As Mintzberg observes, "in the innovative configuration it is the environment that takes precedence. It drives the organization, which responds continuously and eclectically" (1989: 216). It is therefore interesting to explore the pattern of internal responses of organizations operating in the Singapore social productivity movement context. We begin with an overview of the productivity movement between 1982 and 1988, when data were collected.

Social movement and productivity innovations

A social movement is typically defined in sociological texts as involving organized activities by people to promote change, at the level of societal normative or value orientations (Smelser, 1963). Productivity is seen by most national governments as being fundamental to people's standards of living. National societies have adopted different avenues to industrial success: for example, in Japan "keiretsu" (banking-industrial combines) 'often develop new products by providing capital at very low interest rates and they absorb heavy losses for several years' (Kuttner, 1992) but in the long run, productivity, or the output per hour of work is the central factor determining the ability of any society to generate a world-class standard of living' (Thurow, 1992). Lee Kuan Yew's long-lasting Singapore government made the aim of a world-class standard of living for its citizenry its self-confessed "raison d'etre", which makes the Singapore productivity movement such an interesting case.

Productivity improvement is critical if the goal of further development and modernization of Singapore is to be realized. National productivity improvements require social change, such as in the work ethic or in motivation to train for higher skills. Apter urged that modernization be focused on 'ideology, motivation and mobility' (1987: 85): here, the responses of organizations to ideologies of productivity are investigated through interdisciplinary research. The productivity movement is akin to one which Touraine had typified as 'where the state is in control of...the transformation of society' (1985: 88). It has been noted in a number of countries and regions that productivity committees and boards have been rather ineffective. Not so in Singapore, where the National Productivity Board was assigned the duty of being the organizing body for the nation's productivity movement.

As will be seen, various themes were emphasized in the Productivity Movement across the years 1982 to 1988. The first Economic Survey of Singapore report of the Productivity Movement states: 'Productivity was given national prominence with the launching of the Productivity Movement...Its objective was to create widespread awareness of the concept of productivity and to mobilise the support of managers, supervisors...and workers' (1982: 59). This people mobilization theme was again seen in the 1983 issue of the Economic Survey. Under the title 'The will caught on' one finds:

The National Productivity Board stepped up its efforts to promote greater awareness of the importance of productivity. In 1983, the main theme of the Productivity Movement
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was the incultation of the “productivity will”. The objective was to stimulate in the
people a desire to want to do things better all the time.

(Economic Survey, 1993: 64)

The perceptive reader may find this akin to the excellence approach for improving
corporate performance (Peters and Waterman, 1980; Soeters, 1986) and will note here
a serious attempt to turn productivity enhancement into a normative ideology.

The Singapore productivity movement emphasizes a structured, technique-based
approach to productivity improvement. There is also a growing emphasis on the need
for management to implement improvement practices in workplaces. The 1984
Economic Survey records the transition:

In 1984, the National Productivity Board focused its attention on management as it was
felt that there was already a sufficient awareness of productivity amongst employees. The
main theme of the Productivity Movement was ‘Productivity Action at the Workplace’.
The objective was to motivate management to take concrete actions.

(Economic Survey, 1994: 58)

A more bureaucratic control dimension to productivity improvements is seen the
following year viz: ‘In 1985, the focus of productivity promotion was on product
quality and cost reduction through better work attitudes’ (Economic Survey, 1985: 51).
In 1986, a more total approach to productivity improvements was being promoted:

In 1986, the promotional theme of ‘Total Approach to Productivity’ stressed both
manpower and capital productivity. To effect this, several training programmes and
productivity improvement schemes have been implemented for all levels of the
workforce, ranging from managers to supervisors and workers.

(Economic Survey, 1986: 56)

Given these Productivity Movement themes, one might expect some element of
bureaucratization in the way firms in Singapore seek to improve productivity.

The total approach to productivity improvements continued to be emphasized in
1987, but with the stress on the use of performance indicators as the total approach
to productivity improvement, as is seen by:

In spearheading the Productivity Movement, the National Productivity Board continued
to promote the total approach to productivity in 1987. . . . In the area of productivity
measurement, NPB provided assistance to companies in developing effective systems.
. . . In addition NPB assisted companies to develop flexible wage systems based on
productivity performance indicators.

(Economic Survey, 1987: 63)

This is an interesting development in the Singapore social movement on productivity,
for almost two decades ago, when Singapore was still a British colony, the British
management consultant John Humble had widely advocated a ‘Management by
Objectives’ strategy to improve business results.

The focus of the Productivity Movement thereafter turned towards training and the
development of skills: ‘The 1988 theme “Train Up – Be the Best You Can Be” which
emphasized the need for individual skills upgrading and efficiency was promoted
widely through the various media, seminars and conventions’ (Economic Survey, 1988:
58). This empirical study investigates the pattern of interactions (correlations) between
the training and development of human resources and the implementation of different
types of productivity innovations.
Ideological strands

The Government's language of persuasion has reflected a variety of social movement themes. For ease of analysis, these are grouped around a number of productivity improvement practices and 'labelled' according to their conceptual origins – bureaucracy (Weber, 1947; Blau, 1955); management by objectives (MBO) (Humble, 1968, 1975); 'excellence approaches' (Peters and Waterman, 1982). These prescriptions for improving organizational performance are widely known in the management literature even though they are of different vintages. Each prevailed at a different period, the most recent being the excellence approach.

Bureaucracy The characteristics of this for improving performance include the personal involvement of the CEO (Foo, 1989). Weber (1947) has explained the nature of 'imperative' control and co-ordination through the chief and administrative staff (1947: 327). Other aspects of bureaucracy are seen in role specialization, as for example in assigning to a specific person the responsibility of productivity manager, and the use of formal, structured processes such as the setting up of committees.

Management by objectives A widely advocated managerial method for improving performance in the 1970s was the utilization of a participative style through 'management by objectives' (MBO). This entitled the setting of objectives, the use of performance measures or indicators and feedback mechanisms.

The 'excellence' approaches Although there are several well-known attributes of this in the context of performance improvement, for our purpose it is the people-practices aspect that distinguishes this method, for as observed elsewhere (Soeters, 1986), in essence much of the excellence approach resembles the mobilization of human resources. This is reflected by the orientation to customers, the encouragement of staff suggestions and the sharing of corporate information.

These then are the three productivity practices utilized in this paper. The next section develops the conceptual basis for empirical investigations of the interactions between human resource development (training) and these 'categories' of productivity innovations.

Organizational size as a determinant of responsiveness

Organization configurations can be seen in terms of the interactions between an organization's human resource development (training) and approaches being emphasized in the improvement of productivity (Foo, 1992). Figure 1 illustrates the basic conceptual model that underlies this paper. Singapore's national productivity movement, when viewed as a social movement, is assumed to influence organizational orientations towards human resource development across different organizational levels and productivity improvement innovations. The different organizational levels of human resource development (training) are top management, middle and supervisory levels, clerks and production workers. These correspond with Mintzberg's people model of the organization: strategic apex, middle line and operating core. The basic assumption is that Singaporean organizations, under the influence of the Productivity Movement, are likely to behave innovatively in their approaches to the improvement of productivity.
There are good theoretical reasons for exploring the interactions between an organization's HRD and its approach to productivity improvement (indicated in Figure 1, using parallel, vertically aligned arrows). Logically, any effective implementation of productivity innovation in organizations implies some changes in the skills levels of its members. Expected changes in the skills levels in an organization may be facilitated through training and development, whether at the top, middle or lower levels. For example, organizations in Singapore often find it necessary to train production workers when implementing staff suggestion schemes. The main interest here is in exploring the patterns of interaction between training at the various organizational, hierarchical levels and approaches to productivity improvements, and in particular whether there are possible contrasts here between large and small firms. For a variety of theoretical reasons, some differences can be anticipated. Human resource development utilizes scarce resources and hence larger firms, which are likely to possess greater slack resources (Cyert and March, 1963), are more able to emphasize training in the process of productivity improvement. Due partly to the constraint imposed by limited resources, small firms tend to be managed rather differently. In the larger firms there are likely to be greater opportunities for work to be compartmentalized, which in turn suggests the employment of staff with more specialized skills. With a bigger market share as a buffer, larger firms may respond to external threats (e.g., significant improvements in productivity by competitors) in a planned and organized fashion. Small firms, in order to survive, generally need to adapt more quickly to such external changes and as such there is a greater pressure on the smaller firms to be flexible. This also implies the need to develop workers so that they become multi-skilled. Such differences remain valid despite the possible transitions in large firms towards a more flexible organization (as observed, for example, by Sisson, 1989). It is, however, recognized that, although the large firms may employ workers with highly specialized skills, competitive pressures
may force companies to use employees to perform multiple tasks. The dominance of size-contingent findings in the literature (e.g. Grinyer and Yasai-Ardekani, 1981; Hill, 1988) further suggests that size controls may yield contrasting results. In order to ground further explorations of these issues on an empirical basis, a Singapore corporate productivity improvements database is here utilized. The next section discusses methodological details, including aspects of instrument development, data collection and the sample.

Instrument development, data collection and methodology

The data entering the correlational analysis were collected through administering a research instrument called ‘Corporate Productivity Improvement Practices’. As part of pretesting, the scores obtained on the scales were checked with the descriptions by testees of their actual corporate productivity practices. The measures obtained on the productivity improvement scales were found to correspond closely with such descriptions (Foo, 1990). Besides the Likert-type scales utilized to capture the perceptions of productivity improvements (see the more detailed discussion later), information on the respondent’s organization was also gathered. Simple category measures were employed. These include size (category-type measures, by number of employees, ranging from < 25 to 500 or more), ownership (local, foreign, joint venture), age of chief executive, unionization (dichotomous scale of ‘yes’ or ‘no’), labour participation (another dichotomy) and sector (whether in manufacturing or services). In addition to this information, perceptions of the relative position of respondents’ firms against that of competitors, on a range of strategy variables, were gathered: price competitiveness, product/service range, application of new technology, adaptability to market changes and quality of product/service.

The research instruments were administered in 1988 by the first of the authors who acted as an instructor on a twenty-one-hour productivity management programme conducted under the aegis of the National Productivity Board, Singapore (now Productivity and Standards Board). During the early part of the programme, the instructor led discussions on the progressive impacts of the yearly national productivity movements on the internal behaviour of organizations, including in improving productivity. In an earlier paper (Foo, 1992; see figure, p. 605), the first author explored empirically a possible role of organizational culture (operationalized as East versus West) in filtering some of the local influences such as those emanating from the National Productivity Board-led, nation-wide productivity movement. As has already been suggested, the then National Productivity Board has a much higher profile in the Republic than have most similarly named bodies in the other, Western nations. It is mandated by the Government to undertake a range of diverse, vital national tasks allied to the concept of productivity enhancement, including the disbursement of skills development funds which in large measure compensate organizations for the cost of recognized training.

Participants (mostly middle-level executives and involved in sales and marketing function) were asked to respond to the items in the instruments. Their perceptions of the degree of emphasis by their firms on a range of productivity improvement practices were captured on Likert-type scales (1 for ‘none’; 2 ‘little’; 3 ‘some’; 4 ‘large’; 5 ‘very large’). The respondents were instructed to leave unanswered any statements on productivity improvements or measures of which they were uncertain. The main question used to obtain responses on productivity improvements and training was
framed as follows: ‘To what extent are the following typical of the approaches used by your company to improve productivity?’

In detail, the items relating to bureaucracy were: ‘Involvement by chief executive’, ‘Use of committees’ and ‘Person(s) responsible for productivity eg. productivity manager’ (role specialization). As for MBO practices, these were presented simply as ‘Setting of productivity goals or targets’ (setting objectives), ‘Use of productivity indicators’ (use of indicators) and ‘Regular feedback on corporate performance’ (feedback of performance). The last category items – those referring to excellence practices – were formulated as ‘Emphasis on value-creation for customers’ (customer orientation), ‘Emphasis on staff suggestion/participation’ (staff suggestion) and ‘Emphasis on sharing of corporate information’ (sharing information). As for training, the question items were ‘Focus on training of top management’ and similarly for middle-management, supervisors, clerical staff and production workers. In relation to information on the firm’s size, the respondent was asked to indicate the size category applicable (< 25 employees, 25 to 49, 50 to 99, 100 to 199, 200 to 299, 300 to 399, 400 to 499 and > 500). For the purpose of this paper, small size is operationalized as fewer than 100, which fits the Singaporean context. This results in an almost even split of the total sample (43.6 per cent being ‘large’, i.e. > 100 employees).

Although the participants were mainly middle-level executives, other hierarchical levels were represented (6.1 per cent top management, 68 per cent middle managerial level, 15.2 per cent supervisory and 10.6 per cent non-executive). Given the possibility that respondents at these various hierarchical levels may be biased in perceiving different productivity improvements, t-tests for significant differences were carried out. One reason for such bias is the possibility of varying degrees of information exposure for respondents at different hierarchical levels. The differences were, however, found not to be significant. Although the sample obtained is non-random, there were reassuring features. For instance, the percentage of unionized firms is found to be close to the reported overall rate of unionization in Singapore (Foo, 1991). This database was used to inquire, on a preliminary empirical basis, into the patterns of interactions between human resource development and productivity improvements.

The results of correlational analysis using the Pearson product moment correlation are discussed in the next section. General comments are first made on the pattern of correlations for the large firms. Then the focus is turned to the patterns observed within each category of productivity improvement – bureaucratic, MBO and ‘excellence’ practices. This is followed by discussion on the similarities and differences in the patterns of correlations between large and the small firms.

Empirical findings

Larger firms

Interaction between training and productivity practices of large firms operating within the context of the Singapore Productivity Movement are reflected in the correlations presented in Table I. All the signs are positive and most of the correlations are at least suggestively significant (p < .1). These findings suggest that, generally in the larger firms operating in Singapore, training tends to be emphasized when a range of productivity improvements are implemented. Perhaps surprisingly, however, there is in some cases a lack of significance correlation.
Bureaucratic practices As expected within this category, training across all the hierarchical levels (except for production workers) is found to be at least suggestively significantly correlated (p < .1) with 'bureaucratic' productivity improvements – CEO involvement, use of committees and role specialization. Yet, the Productivity Movement context, there remains a lack of any significant correlation between the training of production workers and the use of committees and role specialization. These correlations are significant at the conventional levels for clerical staff. The training of production workers is often emphasized in the Productivity Movement, yet traces of possible discrimination by large firms in the training of white- versus blue-collar employees remain. It is possible that productivity innovation in the larger firms is planned and implemented independently of the training of production workers. Perhaps in the larger firms, those aspects of the human resource development function that relate to production workers’ training are less integrated with innovation in productivity improvements.

Of course, Singapore’s experience here is not unique. Commentator after commentator has noted that management training takes precedence over all other forms of training in the majority of companies in much of the Western world and that blue-collar training all too often comes last. Thus Reich (1991) notes that ‘college graduates are 50% more likely to be trained by their corporations than are high school graduates’ or ‘what [American corporations] do invest in training is...highly concentrated on professional and managerial workers’ and ‘ordinary workers secure little beyond the detailed training necessary to do the next job’ (Thyrow, 1992). If Singapore does indeed follow Western ways of dealing with training, it does so at its peril, as recent history so amply illustrates. The good news for Singaporeans is that the Government took this matter in hand at the beginning of 1993. In any case, it is possible that this may change in the future with the growing integration between personnel managers and line management (Sisson, 1989: 36). A quite different explanation which may apply in the Singapore context is that the larger firms are more likely to employ foreign workers due to a chronic labour shortage in the country. As such, enhanced emphasis on the more structured processes of improving productivity does not necessarily lead to more workers’ training.

Overall, these findings suggest that, for the larger firms, the more bureaucratic approaches in productivity improvements, such as centralized control (implied by greater CEO involvement), structured processes (the use of committees) and specialized roles (the appointment of a productivity manager), tend to be associated with a training and development orientation, even though this may be less so for production workers. This can also be said of the MBO and excellence approaches.

MBO practices A cybernetic style of management, implied by the emphasis on objectives setting and use of performance feedback, is seen to be significantly correlated (at least suggestively) with training across all hierarchical levels including that of the production workers. This may be explained by the need to train production workers in order to obtain reliable feedback from the shopfloor for improving productivity. The only exception is in the use of productivity indicators, which is not significantly correlated with managerial training; this surprises, since productivity indicators, such as the use of output per unit of input (e.g. sales per month), are often useful for monitoring performance. There is a possible explanation for this. Managerial staff in the larger Singapore firms tend to be better than averagely qualified. As such, they are more likely to implement some indicators for monitoring performance without further training. But,
Table 1 Correlations of training and organizational productivity approaches for large firms

<table>
<thead>
<tr>
<th>Training level</th>
<th>Bureaucracy (n = 26)</th>
<th>Management by objectives (n = 26)</th>
<th>'Excellence' practices (n = 25)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a) CEO's involvement</td>
<td>(b) Use of committees</td>
<td>(c) Role specialization</td>
</tr>
<tr>
<td>Top management</td>
<td>59&lt;sup&gt;d&lt;/sup&gt;</td>
<td>51&lt;sup&gt;c&lt;/sup&gt;</td>
<td>42&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Middle management</td>
<td>65&lt;sup&gt;d&lt;/sup&gt;</td>
<td>38&lt;sup&gt;a&lt;/sup&gt;</td>
<td>32&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Supervisory</td>
<td>61&lt;sup&gt;d&lt;/sup&gt;</td>
<td>46&lt;sup&gt;c&lt;/sup&gt;</td>
<td>36&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Clerical</td>
<td>58&lt;sup&gt;d&lt;/sup&gt;</td>
<td>42&lt;sup&gt;b&lt;/sup&gt;</td>
<td>44&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Production</td>
<td>38&lt;sup&gt;b&lt;/sup&gt;</td>
<td>31</td>
<td>16</td>
</tr>
</tbody>
</table>

**Note**

* Rounded to second decimal place, decimal points omitted.

<sup>a</sup> p < .1
<sup>b</sup> p < .05
<sup>c</sup> p < .01
<sup>d</sup> p < .001
in order for management to communicate effectively with the supervisory, clerical and production staff on productivity performance, some form of training is likely to be required. The picture that emerges is that, under social movement influences, training has a role in facilitating a more cybernetic approach in productivity improvements.

**Excellence practices** As suggested earlier, the excellence, people orientation approaches to productivity improvements are akin to social movements (Soeters, 1986) and the correlation results are therefore intuitively appealing (Table 1). The practice of information sharing is found to be significantly correlated with the training of middle-level management. The German experience of co-determination suggests that information sharing down the organization hierarchy, including the middle-management level, is critically important. Supervisory boards are often the organizational devices used by German firms to help facilitate informed debates on critical strategic issues requiring the use of corporate information. Also, traditionally, information accessibility is seen as a major source of personal power for middle management. To implement the process of information sharing with those hierarchically below them, such managers must be convinced of the benefits of doing so. One argument is that disclosure may increase the employees’ commitment. Given a traditional, authoritative style of management, communications tend to be from the top downwards, but for participation schemes to be effective there is a need for a voluntary upward flow of communications. As demonstrated in the classic work by Burns and Stalker (1961), organic organizations tend to encourage participative problem solving as well as communications flow generally and innovative organizations are better served by an organic structure. Training may be utilized to mobilize employees’ concern for workplace improvements and to communicate ideas upwards through staff suggestion schemes.

Finally, in line with expectation, a strong ‘value-creation for customer’ orientation is found to be significantly correlated with training across all the hierarchical levels. And everybody in an organization can in some way contribute to the creation of more value for customers. For such a transition in culture to be effective, it has to percolate down from the top, through the middle levels and right down to the production workers on the factory floor.

**Smaller firms**

The influences of Singapore’s Productivity Movement on the interactional patterns between training and productivity improvements in the small firms contrast with those for large – the significant correlations are less marked, less extensive and, indeed, some of the signs are in the negative (Table 2). The detailed differences are now discussed.

**Differences between smaller and larger firms**

Despite societal influences, there remains in smaller firms, in sharp contrast to the observation in the larger firms, a lack of interactions between top management training and productivity practices. This is reflected in an almost total lack of significant correlations between CEO involvement (within the ‘bureaucracy’ category) and training for all hierarchical levels in the smaller organizations – except for ‘information sharing’ none of the other variables is found to correlate significantly with top management training. The implication is counter-intuitive. The results imply that top management in the smaller firms may not necessarily emphasize productivity improvement practices,
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even though they may learn of such approaches through training—for example, via the workshops conducted by the Singapore’s National Productivity Board. The results are all the more surprising if one considers the fact that the smaller the firm, the more likely it is to be owner-managed, and thus the more it ought to be productivity conscious. In theory, one would expect that, under social movement influences, CEOs would be more receptive to implementing a range of productivity improvements along with training. This suggests that the differences in the CEO’s role between a large and small firm are fundamental in nature—a finding which is consistent with the general management literature when it points to the different managerial skills needed for managing smaller firms (e.g. a more entrepreneurial style) as compared to managing larger organizations. CEOs in smaller firms may be more involved in the marketing and selling of products or other innovations rather than dealing with productivity per se. In Singapore, this may be further reinforced by the tendency of the CEOs in smaller firms to have marketing backgrounds in their earlier careers.

Though less distinctively different, there are some interesting small-versus-large firm contrasts in the patterns of interactions between middle-level management training and productivity improvement approaches. In particular, in the smaller firms the use of performance indicators and staff suggestion schemes is significantly correlated with middle-level training when none of these is significant for the sample of larger firms. In contrast, the setting of objectives and use of feedback are found not to be significantly related in the smaller firms where they are significant for the larger organizations.

Moving further down the managerial hierarchy, one notes that the interactions become more similar for both small and large organizations. Indeed, training at the supervisory level is found to be significantly correlated across all the productivity improvement approaches (except for CEO involvement) which suggests that there may be differences between the smaller and larger firms in the roles of the CEO (where the contrast is significant) and the middle-level manager (where there are some differences). In essence, the role of supervisory management is the same (for the implication of this finding see below). Contrasting patterns are also seen for the training of clerical staff. For the larger firms, these are all at least suggestively significant. But in the smaller firms, only two significant correlations are observed (one of which is at a suggestive level, i.e. p < .1). Also surprisingly different are the findings of significant correlations between training of production workers and the more bureaucratic approaches to productivity improvements (role specialization and the use of committees). It is obvious that smaller firms tend to develop the skills of production workers when there is a determination (as reflected in the appointment of a productivity manager) to implement innovative approaches towards productivity improvements. Possibly in Singapore the blue-collar workers in the smaller firms tend more often to be local nationals, which may explain why top management in the smaller firms are more willing to invest in training and developing the skills of their workers.

The overall results suggest that, despite the influences of the Productivity Movement, smaller firms in Singapore remain less training-dependent when innovations are implemented in productivity improvements. The next section discusses the similarities between the smaller and larger firms.

The critical role of supervisors in the Social Productivity Movement

The most striking findings in terms of similarities between the larger and smaller firms are in the significant correlations found between supervisory-level training (see also
Table 2 Correlations of training and organizational productivity approaches for small firms*

<table>
<thead>
<tr>
<th>Training by level</th>
<th>Bureaucracy (n = 32)</th>
<th>Management by objectives (n = 34)</th>
<th>'Excellence' practices (n = 33)</th>
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<td>51^c</td>
</tr>
<tr>
<td>Supervisory</td>
<td>07</td>
<td>36^b</td>
<td>51^c</td>
</tr>
<tr>
<td>Clerical</td>
<td>-23</td>
<td>14</td>
<td>41^c</td>
</tr>
<tr>
<td>Production</td>
<td>07</td>
<td>33^a</td>
<td>63^d</td>
</tr>
</tbody>
</table>

Note
* Rounded to second decimal place, decimal points omitted.
^ p < .1
b p < .5
c p < .01
d p < .001
earlier discussion) and almost the entire range of productivity innovations (Table 3). In Woodward’s classic contribution on the structuring of organizations (1965), she found supervisory span to be a critical aspect of organization structure. Such consistent results are all the more remarkable when, as suggested by Indik (1964), increases in organizational size tend to be associated with decreases in supervisory ratio (measured in terms of supervisors to total number of employees). A decreasing ratio of supervisors to production workers implies a heavier, more complex workload for the supervisor, requiring in turn more refined supervisory skills. The fact that under the Productivity Movement’s influence both large and small firms tend to train supervisors when implementing productivity innovations suggests a critical role for supervisors.

This raises the question of whether supervisory work per se is in any way substantively different from managerial work. Martinko and Gardner (1990) argue that the nature of managerial work tends to be more fragmented and demands greater spontaneity the lower down the hierarchy the role it is placed. This in turn implies that, in some respects, the on-the-job tasks of supervisors are more demanding and difficult than those of managers higher up the organization hierarchy. It is then not surprising to find that firms, when innovating in productivity improvements through any of the three approaches – bureaucratic, MBO or excellence, find it essential to train supervisors. The importance of the supervisory role may lie in the supervisor’s interactions with the strategic apex via middle management and the operation core. As argued by Langley (1989), such social interactive processes may help cement the firm together – supervisors could, through their direct interaction with production workers, create stronger commitment to the organization, and value congruence among the workers may also be a result of supervisory efforts. Enz (1988) suggested value congruence to be an important source of departmental power. The decision to train supervisors is likely to rest with departmental managers. A power perspective (Clegg, 1979) is attractive, implying that managers may train supervisors so as to enhance their own power base. This in turn suggests an interesting hypothesis, viz. a more highly skilled supervisor will mean a less burdensome managerial task for both top and middle-management.

Other plausible explanations can be found. Given scarce resources, firms, when implementing productivity improvement practices, have to make a choice at which organization level to emphasize training. Logically, they are most likely to devote scarce resources at that level which has the highest marginal rate of return. Mathieu and Leonard (1987) suggested that the return from the training of supervisors tends to be higher than for levels above or below supervision. Also, with a generally lower level of educational attainments in Singapore (supervisors are often promoted from the rank-and-file) as well as a more industry-specific type of experience, supervisors are likely to be less job-mobile – analogous to Gouldner’s category of local (focus on company) rather than cosmopolitan (focus on trade or profession) types (1957) – and firms are more likely to be able to recoup their investments in the training of these ‘local’ supervisors. The observation made by Adam Smith more than two centuries ago that ‘A man educated at the expense of much labour and time to any of those employments which require extraordinary dexterity and skill may be compared to one of those expensive machines’ (1976: 113) is relevant here. Becker (1975) enhanced our understanding when he developed his Human Capital theory which compared ‘general’ (transferable between organizations) with (company) ‘specific’ skills. The two factors discussed – higher marginal rate of return and greater probability of recoupment – may explain the general tendency of firms to train supervisory staff that functions at the ‘interface’ segment, when seeking to improve productivity.
These preliminary findings, drawn from a social movement perspective, also provide some tentative empirics for Mintzberg's concept of the innovative organization. Figure 2 shows an abstraction of Mintzberg's conceptualization of the human side of

![Diagram of Mintzberg's configuration of the innovative organization]

**Figure 2** Mintzberg's configuration of the innovative organization
### Table 3 A summary of significant correlations ($p < .1$) of training and organizational productivity approaches

<table>
<thead>
<tr>
<th>Training by level</th>
<th>Bureaucracy</th>
<th>Management by objectives</th>
<th>‘Excellence’ practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a) CEO's involvement</td>
<td>(b) Use of committees</td>
<td>(c) Role specialization</td>
</tr>
<tr>
<td>Top management</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Middle management</td>
<td></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Supervisory</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Clerical</td>
<td></td>
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<tr>
<td>Production</td>
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</tbody>
</table>
organizations (Mintzberg, 1989: 98). The top segment is the strategic apex, which comprises mainly the top management. The bottom segment is the operation segment where the clerical and production workers interact more directly with the immediate production processes. At the bottom of the middle is the ‘interface’ segment where the supervisory staff are to be found. While the strategic apex of a firm may be engaged in thinking, analytical and decision-making activities, the interface is likely to be involved more in the interactive processes. The crucial function of supervisors is seen in the pattern of correlations found between supervisory training and a very broad range of productivity innovations, as will be observed in Table 3. This aspect seems to be implied intuitively in Figure 2 – the bulge in the middle of the configuration for innovative organization (for discussion of the configuration of innovative organization, see Mintzberg, 1989: 198). It suggests that for successful innovation, organizations need to devote resources in order to build up the capabilities of people operating at the ‘interface’ level.

Social movement and interactional patterns

A ‘molecular perspective’ (Foo, 1992) on the interactional patterns between training and productivity innovations implemented in large and small firms is abstracted and shown in Figure 3. A thick interaction line is drawn when four or more of the training–productivity practice correlations are significant (thin lines = three correlations are significant; dotted lines for two or fewer significant correlations). The diagram gives a more immediate appreciation of the nature of interactions for the smaller and larger firms. The level and degree of interactivity in the larger firms is seen to be much higher than in the smaller. The most obvious contrast is for the MBO practices, where there is little interactivity in the smaller firms. The similarities are equally noteworthy. Role specialization (assignment of a person as productivity manager) and the use of committees in both the larger and smaller firms tend to interact with training more widely across the various organizational, hierarchical levels. This suggests that independent of size, firms that are more structured in productivity management are more likely to reinforce human skills through training and development. This may also be said to be true for the ‘excellence’ approaches to productivity improvements. Such findings suggest there may be value in empirically exploring and abstracting the patterns of interactions within organizations.

Organizational implications

Three main implications emerge from this study.

First, training may be seen to be effective in inducing internal organizational changes, such as a more open, participative style in managing, the development of a customer-oriented culture or for an organization to be more cybernetically inclined. This latter point holds especially for larger organizations – indeed, this study found the cybernetic style of management to be related to training across all the hierarchical levels in the larger firms. Training appears, however, to be less effective in influencing changes in the smaller firms (as is observed from the pattern of less extensively significant correlations).

Second, in both large and small firms, supervisors are pivotal when internal innovative changes are to be made. As seen here, supervisors can be instrumental in implementing various productivity improvements. This instrumentality is reinforced by supervisors operating within the interface segment of an organization. A skilled
Figure 3  A molecular perspective on interactions
supervisor is likely to contribute to cementing an organization together through fostering value congruency. This suggests that organizations should emphasize the training and development of supervisory skills.

Third, it is critical in larger firms that the CEO be personally involved in productivity improvement. One possible consequence of a CEO’s involvement is a more comprehensive identification of training needs. This could result in a corporate-wide plan for the training and development of skills that covers top management, middle-level managers, supervisors and clerical staff as well as the workers on the shopfloor. Such a focus on training and the development of skills is also more likely when a formal, organized approach to productivity improvement is adopted.

These then are some lessons for managers at the level of the firm. The next section raises the question of what may be the relevance of the Singaporean Productivity Movement experiences as a whole.

Relevance of the Singaporean Productivity Movement

It must be remembered that Singapore is unique and different in many aspects from a typical developing country in Africa or Asia. The drivers behind her success may not be found in another country.

One, Singapore is really a very small island and a city-state. Thus, in making comparisons on economic progress, such a factor ought to be considered. For example, Singapore has no agricultural sector – traditionally a low productivity sector – to worry about. In other words, her productivity performance ought to be compared with that of ‘cities’ rather than ‘countries’. It makes more sense to compare Singapore’s economic performance with, say, the cities of China than China per se.

Thus the double-digit economic growth rates of Shenzhen, for example, compare favourably with Singapore’s at similar stages of development. But Shenzhen has access to a supply of very low-wage workers from China’s deep hinterland, farmers who hunger for work. For Singapore it is again different. She depends on foreign workers for cheaper labour. But, as neighbouring countries develop economically, such a supply is likely to become less abundantly available and thus scarce. Second, it is likely to become more expensive. Thus, there is a case for more productive use of labour. In the case of Shenzhen the supply of the eager-for-work farmers is limitless. Some questions may be asked that are outside the scope of this paper, like ‘Does Shenzhen need a Productivity Movement on the scale and intensity of Singapore’s?’

Two, Singapore had benefited from the inheritance of the old colonial British administrative structure. She had some soft system to work by, unlike, say, China in 1949. Also, during the critical early phase of economic development (last 1960s and 1970s) there was a generation of the Chinese working populace (now retired) who still strongly practised the Confucian work ethic (as in Hongkong). Again, for the sake of comparison, the Chinese on the mainland during a similar period saw Confucius as part of feudalism. In Singapore the use of English as a working language made it easier to attract foreign direct investment. The presence of MNCs, besides facilitating the transfer of ‘soft’ systems skills like management, also provides possibilities for some local support industries to develop. In sharp contrast, China inherited a saga of foreign exploitation of her economic resources. Instead of luring foreign direct investment, China was in self-inflicted chaos – the Cultural Revolution.

These contextual factors may partly account for the success of Hong Kong, too. From this vignette of the two cities we turn to the crystal ball. By extension of the Singapore
case, the Hong Kong Chinese may be said to be poised on the edge of an even more productive economy after 1997’s ‘liberation’ from ‘clutches’ of the Old British Empire. It will be a most exciting socio-economic experiment to watch: what will be the productivity of Hong Kong vis-à-vis city-states like Singapore?

Nobody who knows Hong Kong will be in any doubt as to the diligence of the average Hong Konger. Additionally, Hong Kong businessmen are renowned for quick flexibility in seizing opportunities and countering threats. Hong Kongers continue to transmit core Confucian values through Cantonese (a Chinese dialect) in their families. Given these circumstances, it is debatable whether a Productivity Movement – on the scale and intensity of Singapore’s – is essential to sustain performance.

Three, Singapore may be said to be close to the ceiling of dependence on foreign-direct-investment (FDI)-driven growth: the typical manufacturing operations. The stage had come for economic growth to be fuelled rather by innovation and fresh technology. Singapore cannot simply replicate her own success formula. For one thing, neighbouring countries (with significantly lower labour costs) are already quick to re-create similar if not even better conditions of investment, emulating, for example, Singapore’s strategy in keeping an open economy and aggressive, niche-focused investment promotion policies. But expectations that growth in Singapore will go on unabated still persist among visitors to the island. This is explained by a parable.

What truly amazes the foreigner on first visit to Singapore is to witness the rapid speed of transformation into modernity. The most spectacular sight is arguably when he first steps down into Singapore: immediately upon arrival the foreigner is overwhelmed by the massively impressive Changi Airport. Such concrete transformation, is not likely to seem so astounding, however, when he inquires deeply into the structural configuration of Singapore’s economy, learning, for example, that, unlike in Korea or Japan, there is a paucity of indigenous Singaporean industrialists.

Thus the current drive of the Singapore Government to build upon the Singaporean MNCs. If the formula of the Singaporean Productivity Movement had indeed succeeded in cultivating in Singaporeans positive attributes for competitiveness (e.g. healthy work attitudes), then one question immediately presents itself. Does Singapore need (at this stage of her economic development) a Creativity and Innovation Movement? Or more on technology (Foo, 1997) of the same scale and intensity as the Productivity Movement? Will it work?

These issues are raised to illustrate by comparison and contrast the particular setting of Singapore. What this paper had explored is the internal change possible within firms operating within the context of a social movement emphasizing productivity. It is attractive by simple extrapolation to argue for the relevance of such a social movement to other countries. Yet one must recognize contextual differences even across culturally similar countries: the small (Singapore) and the extremely large (China). Between the more alike in size there are still remarkable differences (Singapore versus Shenzhen or even Hong Kong) that make the Singapore Productivity Movement immediately less directly relevant.

Social movement and research directions

In concluding this paper the authors hope that their work, which is a first exploratory attempt of its kind in explaining a complex socio-industrial reality, will stimulate researchers in other countries also to contribute. For other countries may draw lessons from the Singapore’s experience of focusing the minds of her people on improving
productivity. Productivity still holds the key to economic progress and development. For example, our northern neighbour Malaysia in their next five-year plan had identified ‘low productivity rises’ to be tackled under what the *The Economist* described as part of the ‘Grand Plans’; Further away but still within South East Asia, the Philippines, called by Newsweek the ‘The Newest Asian Tiger’ too had launched their productivity drive (*Straits Times*, 1996). Whatever technological or economic initiatives the government of any country may choose to implement it is still consistent to cultivate in the people a consciousness of productivity.

The first author is personally involved in the early stages of implementing the Singapore national movement (as Assistant Director of Planning Unit, National Productivity Board) and, at the time of collecting data for this paper, was also instructing the course. Such direct personal experiences reinforce the first author’s view of this strong employee identification with the Productivity Movement. Further extended research work is now being planned. Clearly, the effective contribution of Singapore’s Productivity Movement is difficult to measure directly, but recent statistical analysis suggests that the structural transition in the Singapore economy is headed in the right direction. As a recent article concludes, ‘Studies show that in the developed countries, TFP (Total Factor Productivity) accounts for 50–60 per cent of productivity increases. Singapore achieved this level between 1986 and 1991’ (Ramasamy, 1993). In a world of economic crises, enhanced productivity can play a major role in solving many problems by putting the world back on a growth trajectory. Hopefully this paper may stimulate other researchers.

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Notes

1 The word ‘innovate’ has been defined by Mintzberg thus: ‘To innovate means to break away from established patterns’ (1989: 199).

2 Rush (1992), in his recent introductory text *Politics and Society*, remarked: ‘A considerable obstacle to further progress in...political sociology in particular is the fragmentation of knowledge’ (245).

3 See also *Straits Times*, 2 November 1988: Prime Minister Lee Kuan Yew urged in his opening address at the inauguration of Productivity Month 1988 that CEOs be more personally involved in productivity improvement.

4 According to this NPB report, the efficiency with which inputs are utilized in production is captured by the total factor productivity. The other major factor accounting for productivity as measured by output per worker is capital input.

References


Productivity innovation as a social movement


Strait Times (1993a) 27 May.

Strait Times (1993b) 28 May.


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