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<th>Published in collaboration with the European Group for Organizational Studies (EGOS)</th>
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Culture, Productivity and Structure: A Singapore Study

Foo Check-Teck*

Abstract

This study investigates the differences in the perceived approaches to productivity improvement between domestic-owned and Western-owned companies in Singapore. Although the differences found in the scores are small, which may imply support for the culture-free thesis, analysis of the pattern of significant correlations between the two samples suggests otherwise. There is a sharp contrast in the pattern of significant interrelationships.

Introduction

The debate continues on whether or not organizations are culture bound (Child and Kieser 1979; Lammers and Hickson 1979; Azumi and Hull 1981). Recent empirical research evidence (e.g. Martin and Glisson 1989), utilizing perceptual measures of organization structure, did not find support for the culture-free school (Hickson et al. 1974; Kuc et al. 1980; Marsh and Mannari 1980; Hsu et al. 1983). The culture-specific school (Lincoln et al. 1978; Clark 1979; Jamieson 1980, 1982/83; Sorge 1982/83) contends that societal culture conditions the impact of some contextual variables. For instance, contextual variables such as size (Hall et al. 1967; Blau 1970; Child 1973; Grinyer and Ardekani 1981) and technology (Woodward 1965) had been found to be predictive of organization structure, the latter being less predictive (Hickson et al. 1969; Pugh et al. 1969). A useful distinction is made between the level of, or amount of, each structural feature and relational aspects of organization structure (Lammers and Hickson Chap. 1, 1979). Organizations may vary in none, one or both of these in their design.

This study extends the body of research that has revolved around the debate by exploring possible East–West differences in the means ('structuring') of attempting to improve productivity. As defined by Drucker (1974) structure is '...the means for attaining the objectives and goals of an institution...' (p. 52). Productivity improvement is posited here as the organizational goal. This inquiry focuses on the nature of culture-related variations in the structural response of organizations.
Methods Used by Organizations to Improve Productivity

Since 1982 there has been a national ‘Productivity Movement’ in Singapore. Organizations as well as the public are urged via the media to be more productivity-oriented, and this may influence the choice of, as well as the emphasis on, particular means of achieving higher productivity. Such a societal value-orientation towards higher productivity can be expected to filter through organizational boundaries in many ways (Martin and O’Connor 1988). Organization-specific culture (Schein 1985) can also be expected to shape the way organizations respond.

This paper explores possible contrasts in Singapore between Western (foreign, multinational) and Eastern (Singaporean, indigenous) organizations in the mode of structural configuration they use to foster higher productivity. Different Western organizations operating in the Singaporean environment may actually be similarly configured yet differ from their Singaporean-owned counterparts. Findings suggesting a lack of difference could still be useful, as this could suggest a certain universality (Brilin 1983) in the way organizations respond structurally to societal pressure for productivity improvement. The overarching question that is being explored here can be stated simply as follows:

Are there significant differences in the way Western and Eastern organizations attempt to improve productivity?

Differences between Eastern firms (operationalized as wholly-owned Singaporean companies) and Western firms (foreign, mainly European and American firms that are either wholly foreign-owned or are joint-venture companies) could be expected either in levels of scores on variables or in the rank orders found within each sample, or in the relationships between variables. Pascale and Athos (1981), for example, found that American organizations emphasize more of the ‘hard’ aspects of the McKinsey 7S framework, whilst the Japanese are inclined towards the ‘softer’ side — to shared values, style, staff and skills. With its great emphasis upon productivity, Singapore provides an ideal societal context in which to examine the possibility of structural differences between contrasting domestic and Western-owned organizations.

There is a rich prescriptive literature on the different approaches to productivity improvement (Sibson 1976; Sink 1985; Patton 1987). These can be conveniently grouped into three broad categories that reveal a whole range of technological, strategic and personnel options available to organizations as a means of improving productivity. The application of technology (Blau et al. 1976; Robey 1977; Love et al. 1989) could be informed by various objectives such as improvements to efficiency or product quality. Similarly, strategic options (Mintzberg 1988; Schneider 1989), could include a specific emphasis upon price leadership (Porter 1985), product range (Ansoff 1965) or role specialization (by designating a person as productivity manager).

In terms of personnel, a variety of options exist that focus upon pro-
ductivity improvements at the individual, departmental or organizational level. Equally, human resource training and development can be used as a means of productivity enhancement (Robinson 1981; Casio 1986; Farnham 1986; Rosow and Zager 1988). The amount of investment devoted to training could also be differentiated according to hierarchical level. Thus, some writers may emphasize top management training, whilst others training of the supervisory staff (Child and Partridge 1982).

In addition to the various options regarding technology, strategy and personnel management, variations also exist in the interrelationships between each of these variables. The primary interest of this paper is on those differences that are interrelational. For instance, the paper explores how differences in training between Western and domestic-owned organizations interrelate with various productivity improvements. Surprisingly little attention has been given to the way in which training is related to different organizational attributes. Yet, these interrelationships and differences can be crucial. For example, when planning and control systems are prioritized as a method of productivity improvement the need to train supervisors may emerge. The effectiveness of the planning and control system is likely to depend on the skills of supervisory staff, for example in providing timely feedback or setting attainable targets. Similarly, when technology is viewed as the pathway to improved productivity, the need to train staff could again be pressing, for example in maintaining certain skill levels during the introduction of new technologies. Decisions to relate training to one or more of these means to productivity enhancement may be dependent on ownership (e.g. indigenous or foreign). Thus where an organization creates the specialized role of a productivity manager as a means of improving productivity, this is likely to be associated with an organizational emphasis on training. Hence training may be a crucial factor in facilitating productivity improvements.

Method

This study utilizes data gathered in 1988 on employees' perceptions of the various approaches by which their own organizations seek to improve productivity (single respondent from each organization). The data were collected by the researcher (also as course leader) administering the survey instruments to participants on a productivity management course (the module comprises a total of 21 hours spread over a 7-week period); the course was organized by the National Productivity Board. In response to a question on approaches to productivity improvement, participants were asked to score on a five-point Likert-type scale. For this paper, these are grouped into various categories as follows:

Question: To what extent is the following typical of the approaches used by your company to improve productivity?
None=1, Little=2, Some=3, Large=4, Very Large=5
Training
Focus on training of top management
Focus on training of middle management
Focus on training of supervisors
Focus on training of clerical staff
Focus on training of production workers

Technology
Use of labour-saving technology
Use of information technology
Use of latest technology to enhance product quality
Use of artificial intelligence technology

Planning System
Productivity as part of corporate policy
Setting of productivity goals or targets
Use of productivity indicators
Regular feedback on corporate performance

Personnel System
Emphasis on value-creation for customers
Emphasis on staff suggestion/participation
Emphasis on sharing of corporate information
Emphasis on job design
Emphasis on incentives
Sharing of productivity gains

Structural
Involvement by the chief executive
Use of committees
Person responsible for productivity, e.g. productivity manager

Productivity
Emphasis on individual level of productivity performance
Emphasis on department level of productivity performance
Emphasis on corporate level of productivity performance

Managerial responses could differ according to each of these approaches to productivity improvement. To the extent that these are consistently emphasized over time, they become a part of the internal organizational, structural configuration for productivity improvement.

As for the strategy variables, participants were asked to rate their firm’s position relative to major competitors. The specific question being:

Question: How do you rate your company when compared to your major competitors?
Much Below Average=1, Below Average=2, Average=3, Above Average=4, Much Above Average=5

Strategy
Price competitiveness
Product/service range
Application of new technology
Adaptability to market changes
Quality of product/service

If these characteristics are stable over time, they could be said to reflect the strategic posture of the firm.

Sample

For the purpose of this analysis, the total sample is split into an 'indigenous' sample comprising scores obtained from respondents who are employed in wholly Singaporean-owned firms (N=32) and those working in 'foreign' firms (either wholly foreign-owned or joint-venture) (N=35). The foreign sample is made up predominantly of Western (American and European) corporations, though two are Japanese. Although the differences reflect contrasts between Singaporean and Western practices of organizing, at a broader level they embody basic East–West cultural and social differences.

In order to examine the influence of seniority on the data, differences in respondents’ hierarchical levels are compared. From Table 1, it is clear that, in this respect, except for top-level representation where the indigenous sample is higher, the proportional distribution in the two samples

<table>
<thead>
<tr>
<th>Organizations</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous firms</td>
<td>32</td>
<td>47.8</td>
</tr>
<tr>
<td>Foreign firms</td>
<td>35</td>
<td>52.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondent Characteristics</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Indigenous firms</td>
</tr>
<tr>
<td>Top level</td>
<td>9.4</td>
</tr>
<tr>
<td>Middle level</td>
<td>62.5</td>
</tr>
<tr>
<td>Supervisory level</td>
<td>15.6</td>
</tr>
<tr>
<td>Non-executive</td>
<td>12.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Employees</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indigenous firms</td>
</tr>
<tr>
<td>Small</td>
<td>Cum</td>
</tr>
<tr>
<td>Less than 49</td>
<td>43.7</td>
</tr>
<tr>
<td>50 to 99</td>
<td>12.5</td>
</tr>
<tr>
<td>100 to 199</td>
<td>18.8</td>
</tr>
<tr>
<td>200 to 299</td>
<td>6.3</td>
</tr>
<tr>
<td>Large</td>
<td>Cum</td>
</tr>
<tr>
<td>300 to 399</td>
<td>3.1</td>
</tr>
<tr>
<td>More than 400</td>
<td>15.6</td>
</tr>
<tr>
<td>More than 100</td>
<td>18.7</td>
</tr>
</tbody>
</table>
is quite similar. The only exception is in the lower percentage in the top level of the foreign sample. However, this is balanced by a higher representation at the middle management level. Such differences are unlikely to affect the results. Indeed, using a $t$-test for differences in perceptions due to the hierarchical levels showed that there were no significant differences. Furthermore, no sharply contrasting differences are found in the job titles of the indigenous and foreign samples.

As the impact of size on organizational structure is well documented in the literature, comparisons between the two samples in terms of the number of employees are made. Table 1 reveals that the size patterns are largely similar. Although there are differences across the size categories of small (less than 100), medium (100 to 299) and large (300 to more than 400), these are negligible. The more obvious differences are to be found within the small size category between the two size bands (less than 49 and 50 to 99). Given this, the overall size effect on the observed sample differences in the structural configuration are at most, marginal.

**Descriptive Results**

**Training Variables**

The sample means of the emphasis placed on training at different hierarchical levels are presented in Table 2. The means of the foreign sample

<table>
<thead>
<tr>
<th>Hierarchical Level</th>
<th>Indigenous Firms</th>
<th>Foreign Firms</th>
<th>$t$-Tests</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Dev</td>
<td>N</td>
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<tr>
<td>Top management</td>
<td>2.50</td>
<td>0.95</td>
<td>32</td>
</tr>
<tr>
<td>Middle management</td>
<td>2.66</td>
<td>0.97</td>
<td>32</td>
</tr>
<tr>
<td>Supervisory level</td>
<td>2.66</td>
<td>1.13</td>
<td>32</td>
</tr>
<tr>
<td>Clerical staff</td>
<td>2.28</td>
<td>0.99</td>
<td>32</td>
</tr>
<tr>
<td>Production workers</td>
<td>2.10</td>
<td>1.18</td>
<td>29</td>
</tr>
</tbody>
</table>

are systematically higher for all hierarchical levels of training orientation. In terms of significant differences, however, it is only in middle management training that a statistical difference seems to occur (that is, at 0.1 level). What is interesting is the rather similar rank order in the means within both samples (the only exception being in middle management training in the indigenous sample, which is at par with the supervisory sample). In general terms, it can be said that both samples tend to prioritize the importance of middle management training (there is a lower standard deviation score for middle management training compared with supervisory training in the indigenous sample), followed by supervisory, then top management, then clerical and finally production.
Technology, Planning, Personnel and Productivity Variables

Table 3 presents the sample means of the emphasis on the technology–personnel variables for productivity improvement. As with the training means, the pattern is one in which the foreign sample means is higher than the indigenous. The only exception is one found in the personnel system, that of staff suggestion. Of these, only that of information processing technology is found to be statistically significantly higher (0.05 level), whilst that of product quality technology, and target setting are almost statistically significant (at the 0.05 level). Both the variables of job design and productivity improvement at departmental level are only suggestively significantly different (at 0.1 level).

<table>
<thead>
<tr>
<th>Technology–Personnel Context</th>
<th>Indigenous Firms</th>
<th>Foreign Firms</th>
<th>t</th>
<th>p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour saving</td>
<td>2.84 0.95 32</td>
<td>2.94 1.13 32</td>
<td>-0.36</td>
<td>0.722</td>
</tr>
<tr>
<td>Information processing</td>
<td>2.69 0.97 32</td>
<td>3.24 1.25 33</td>
<td>-2.00</td>
<td>0.050</td>
</tr>
<tr>
<td>Product quality</td>
<td>2.66 0.79 32</td>
<td>3.18 1.33 33</td>
<td>-1.93</td>
<td>0.058</td>
</tr>
<tr>
<td>Artificial intelligence</td>
<td>1.97 0.97 32</td>
<td>2.45 1.48 29</td>
<td>-1.51</td>
<td>0.136</td>
</tr>
<tr>
<td>Planning System</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productivity policy</td>
<td>2.56 0.95 32</td>
<td>2.74 1.36 35</td>
<td>-0.62</td>
<td>0.534</td>
</tr>
<tr>
<td>Target setting</td>
<td>2.56 1.08 32</td>
<td>3.14 1.31 35</td>
<td>-1.97</td>
<td>0.053</td>
</tr>
<tr>
<td>Productivity indicators</td>
<td>2.00 0.84 32</td>
<td>2.18 1.16 33</td>
<td>-0.72</td>
<td>0.473</td>
</tr>
<tr>
<td>Performance feedback</td>
<td>2.38 0.91 32</td>
<td>2.69 1.16 35</td>
<td>-1.22</td>
<td>0.229</td>
</tr>
<tr>
<td>Personnel System</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer value</td>
<td>2.88 1.24 32</td>
<td>3.00 1.37 33</td>
<td>-0.39</td>
<td>0.701</td>
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<tr>
<td>Staff suggestion</td>
<td>3.25 0.92 32</td>
<td>3.09 1.15 35</td>
<td>0.64</td>
<td>0.522</td>
</tr>
<tr>
<td>Information sharing</td>
<td>2.44 0.95 32</td>
<td>2.76 1.18 34</td>
<td>-1.24</td>
<td>0.221</td>
</tr>
<tr>
<td>Job design</td>
<td>2.39 1.09 31</td>
<td>2.85 1.12 33</td>
<td>-1.67</td>
<td>0.100</td>
</tr>
<tr>
<td>Incentives</td>
<td>2.56 1.16 32</td>
<td>2.74 1.11 34</td>
<td>-0.62</td>
<td>0.539</td>
</tr>
<tr>
<td>Gain-sharing</td>
<td>2.09 0.73 32</td>
<td>2.38 1.15 34</td>
<td>-1.20</td>
<td>0.234</td>
</tr>
<tr>
<td>Productivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>2.66 1.07 32</td>
<td>2.97 1.10 35</td>
<td>-1.19</td>
<td>0.238</td>
</tr>
<tr>
<td>Departmental</td>
<td>2.34 1.00 32</td>
<td>2.86 1.14 35</td>
<td>-1.95</td>
<td>0.056</td>
</tr>
<tr>
<td>Organisational</td>
<td>2.50 1.16 32</td>
<td>2.88 1.23 34</td>
<td>-1.30</td>
<td>0.199</td>
</tr>
</tbody>
</table>

Interestingly, the order of importance given to technological application differs between the samples, with most emphasis in the indigenous sample being placed on labour saving, and in the foreign sample on information processing. In the indigenous sample, the next category in terms of importance is information processing, followed by product quality. For the foreign sample, product quality comes before labour saving. Both, however, place least importance on artificial intelligence.

The hierarchical pattern for planning systems variables is rather similar,
with the foreign sample giving greater emphasis on target setting, followed by the making of productivity as part of corporate policy. In the indigenous sample, there appears to be equal emphasis on productivity policy as well as on the target-setting aspects of productivity improvement. For both, the next priorities are performance feedback and the use of productivity indicators.

In terms of the personnel system variables being emphasized, there is remarkable similarity in the order of importance accorded within each sample. The order for the foreign sample is that of staff suggestion, customer value orientation, job design, information sharing, use of incentives and gain-sharing. With the exception of job design, and the use of incentives where the order is reversed, the rankings for the other variables are the same. Also similar are the productivity variables. Here the emphasis on productivity improvement is on the individual level, followed by the organizational and then that of the department.

**Strategy and Structural Variables**

The means for the strategy-structural approaches to productivity improvement are presented in Table 4. This reveals that across all the

<table>
<thead>
<tr>
<th>Strategy-Structural Context</th>
<th>Indigenous Firms</th>
<th>Foreign Firms</th>
<th>t-Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Dev</td>
<td>N</td>
</tr>
<tr>
<td><strong>Strategy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price competitiveness</td>
<td>3.38</td>
<td>0.64</td>
<td>26</td>
</tr>
<tr>
<td>Product range</td>
<td>3.35</td>
<td>0.89</td>
<td>26</td>
</tr>
<tr>
<td>New technology</td>
<td>3.15</td>
<td>1.03</td>
<td>27</td>
</tr>
<tr>
<td>Market adaptability</td>
<td>3.33</td>
<td>0.73</td>
<td>27</td>
</tr>
<tr>
<td>Product quality</td>
<td>3.52</td>
<td>0.75</td>
<td>27</td>
</tr>
<tr>
<td><strong>Structural</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO involvement</td>
<td>2.75</td>
<td>1.27</td>
<td>32</td>
</tr>
<tr>
<td>Use of committees</td>
<td>2.29</td>
<td>1.30</td>
<td>31</td>
</tr>
<tr>
<td>Productivity manager</td>
<td>2.10</td>
<td>1.11</td>
<td>31</td>
</tr>
</tbody>
</table>

variables (price competitiveness, product range, new technology application, market adaptability and product quality) the ratings for indigenous firms are found to be consistently lower than those for the foreign sample. The statistically significant differences are found in product range (0.001), new technology application (0.05), price competitiveness (0.05) and product quality (partially 0.1). Interestingly, the mean scores for all the strategy variables for both indigenous and foreign samples are above the 'average' 3-point rating. There are, however, some differences in the ordering of the means. In the strategy category for the foreign sample, the key variable is product range, followed by product quality, price competitiveness, new technology and, least important, market adaptability. In the indigenous sample, by contrast, product quality is the key
followed by price competitiveness, product range, market adaptability and, finally, new technology.
In the structural category, only in the score for CEO involvement variable is the foreign sample higher than the indigenous. In terms of the use of committees, both scores are found to be equal. The role of productivity manager appears to be more important among the indigenous firms than in the foreign organizations. These inter-variable differences are, however, not statistically significant. There is also similarity in the ordering of the means. Both foreign and indigenous firms tend to place more emphasis on CEO involvement, less on the use of committees and least on the role of a productivity manager.

Correlation Results

Technology–Personnel Correlates of Training

In the real world, organizations are likely to seek productivity improvement by using more than one approach. The introduction of new technology in the workplace will lead to a need for production workers to acquire some new skills. If a planning and control system is to be introduced successfully, some form of training is likely to be needed, especially for supervisory staff. Even personnel systems such as staff suggestion schemes could require some form of training, if they are to be effective. The emphasis on improving productivity through training and the development of skills is thus expected to correlate positively with other organizational approaches, such as the use of technology and the design of planning and personnel systems. In addition, a focus on productivity improvement at any one or more of the individual, departmental or organizational levels is expected to correlate positively with training.

The correlations of technology–personnel variables with training at different hierarchical levels are presented in Table 5. Except for isolated instances found only in the foreign sample, the direction of the correlations are as anticipated. However, there are sharp differences in the pattern of the correlations between the foreign and the indigenous sample. The most striking differences are the correlations found within the planning, personnel and productivity categories. Even within the technology category, differences in the overall pattern as well in the types of variables were found to correlate significantly with the training category of variables (at 0.05 level).
Within the foreign sample, the use of technology variables for labour saving and information processing are found to be significantly correlated (mostly highly) with training across different hierarchical levels. By contrast, in the indigenous sample, there is a lack of significant correlations (though two could be important) between labour-saving technology and training. What is interesting is the direct contrast between indigenous and foreign samples, regarding the pattern of information technology correla-
<table>
<thead>
<tr>
<th>Technology (Ni = 29, Nf = 25)</th>
<th>Training by Hierarchical Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Top</td>
</tr>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>Labour saving</td>
<td>.31*</td>
</tr>
<tr>
<td>Information</td>
<td>.38*</td>
</tr>
<tr>
<td>Product quality</td>
<td>.40*</td>
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<td>Artificial Intelligence</td>
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<td>Productivity Policy</td>
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<td>Performance feedback</td>
<td>.62***</td>
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<td>Staff suggestion</td>
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*** < 0.001; ** < 0.01; * < 0.05; * < 0.1 (suggestive).
tions. The foreign sample exhibits a ranking that is particularly differentiated according to hierarchy (the more hierarchical levels there are in the organization, the stronger the correlations) — top management ($r=0.84$), middle management ($r=0.83$), supervisory ($r=0.70$), clerical ($r=0.55$) and production ($r=0.41$); the indigenous sample reveals a more or less reverse order. This suggests that in the foreign firms, persons at the higher managerial levels are more inclined to develop skills in order to exploit the productivity potential of information technology. Within indigenous firms, however, top managers tend to rely for these purposes more on those on the lower rungs of the organizational ladder, such as the clerical staff.

Also, although the emphasis on technology for product quality improvement is significantly associated in both samples with training at clerical level, interesting contrasts occur in the data. Within the indigenous sample, this is found to be significantly correlated to training at the top management level (only partially so for the foreign). In the foreign sample, the correlation is found to be significant for the training of production workers. This suggests that foreign firms are more inclined to train workers as part of the process of introducing technology to improve product quality. The results also imply that the top management of indigenous firms tend to be more technology-oriented in seeking improvements in product quality when they are exposed to training and development. Regarding artificial intelligence technology, this is associated significantly with the training of top managers and production workers in the foreign sample. There is, however, a lack of any significant correlation for the indigenous sample with regard to this variable.

Looking exclusively at the foreign sample, these findings are particularly interesting when seen in the light of the almost equal strength of correlations between artificial intelligence and the training of both top management and production workers. These data contrast with a more ordered pattern observed for information technology. The results suggest that foreign firms not only integrate training with technology, but differ in their approach when the type of technology emphasized in productivity improvement is qualitatively different. When considering these data, it should also be recognized that foreign firms are likely to be more technologically advanced in their manufacturing processes than indigenous companies. Overall, research reveals that foreign firms view training as an integral part of organizational efforts to improve productivity.

There is a remarkable difference between the foreign and indigenous samples when the planning system category of variables are considered. Whilst the foreign sample reveals an almost complete lack of any significant correlations (except for an isolated instance of middle-level management training with the emphasis on productivity as part of corporate policy) the indigenous sample displays a distinct pattern of significant correlations (except for one which is partially significant).

This finding suggests that the indigenous firms tend to perceive training as necessary in instituting a cybernetic process for productivity improve-
Training can, for instance, contribute to making an organization's staff more flexibly skilled and thus be better able to exploit opportunities identified by a planning system for improving productivity. Indigenous firms could also be more willing to provide training to production-level staff in order to develop a local talent pool. Given experience and training, such production-line workers could be promoted to supervisory ranks.

Despite the earlier findings in the foreign sample of significant, positive correlations between the training of production workers and the use of technology variables, there is a consistent absence of any significant correlations for all the planning system variables. Given the earlier findings of very strong correlations between the use of information technology and the training of top and middle management, it is possible that the management of foreign firms see less need for integrating feedback from production workers into the planning cycle. This seems to also imply that in planning and control activities, foreign firms could focus mainly on the quantitative rather than qualitative aspects. Perhaps the more limited scope of operations (e.g. assembly of parts for re-shipment and head-office) implied by the subsidiary status of some of the foreign firms can provide a partial explanation for the lack of statistical significance in some of the training-planning system relationships.

The results contrast so markedly, however (e.g. that of performance feedback), that a culture-bound explanation appears equally attractive. Thus, it is possible that indigenous firms perceive improvements in the level of skills of lower staff through training and development to be more critical (e.g. in obtaining reliable feedback information) than foreign companies, when designing planning and control systems for productivity improvements.

Although the contrast is less marked, the pattern of correlations between the personnel system variables and training in both samples differs considerably. The most intriguing subset of correlations are those found between top management training and those of the personnel system variables. Whilst in the indigenous sample, the pattern is consistently one of significant correlations across the whole spectrum of personnel system variables and, more significantly, with information sharing, gain-sharing and incentives. There is a dearth of significant relationships in the foreign sample. The training of the least senior groups in the organizational hierarchy are found to be significantly related within the indigenous sample, particularly in relation to practices of staff suggestion, information-sharing and gain-sharing. Yet none of these are significant in the foreign sample. Although there is marginally less contrast in terms of the correlations for the middle levels of the organizational hierarchy, differences remain, especially for personnel system variables of incentive and gain-sharing.

The only exceptions to this overall pattern of, on the one hand, significant correlations, found in the indigenous sample and, on the other hand, a lack of these relationships in the foreign sample, are in the correlations of
supervisory and clerical training with customer value orientation. This seems to imply an inclination by indigenous firms to develop the ‘softer’ structural aspects of the organization such as a belief in value creation for customers or the cultivation of an information-sharing organizational culture through human resource training and development. The signs of the correlations in the foreign sample are still mostly positive, which seems to suggest more of a difference in the role of training in foreign firms, as compared with the indigenous sample. In other words, the motivation for training in foreign firms is likely to be qualitatively different from the factors that seem to influence the indigenous sample.

As for the productivity category of variables, sharp differences are also found. In the indigenous sample, correlations at the organizational and departmental levels are both very strong and highly significant (0.001 level). Even though the correlations at the individual level are less strong, they nevertheless remain statistically significant. In marked contrast, there is a lack of any significant correlation in the foreign sample. In fact, for the individual level correlations, these are all in the opposite, negative direction.

Again, one possible explanation lies in the subsidiary status of foreign firms. However, it is equally plausible that a cultural explanation could be used to illuminate these observations. Indigenous firms tend to emphasize training from the top down to the bottom rungs in the organizational hierarchy, whereas there is also a strong focus on productivity improvements at the overall corporate level. The same cannot be said of foreign firms.

**Strategy–Structure Correlates of Training**

Within the strategy category of correlations (Table 6) there are distinctly different patterns between the foreign and indigenous samples. The most contrasting difference lies in the product range strategy. Whilst product range strategy is positively and significantly (mostly at the 0.01 level) correlated with training across all hierarchical levels in the foreign sample, no such significant correlations are found in the indigenous sample. Indeed, in the latter case the directional pattern is negative.

The foreign firms are thus more likely than the indigenous ones to integrate training with a broader product range strategy. A diversified portfolio of products, especially if unrelated, is likely to result in a more complex operating environment. To help staff cope with this complexity, product-related training may be implemented. Yet, this is not the case for indigenous firms.

With regard to the strategy of using new technology, in the foreign sample, the relationships are again both positive and significant. In the indigenous sample, while the patterns are generally positive, none is statistically significant. This result is consistent with the earlier findings of significant technology–training relationships, and further confirms the
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<td>0.35*</td>
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<td>Use of committees</td>
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<td>Productivity manager</td>
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*** < 0.001; ** < 0.01; * < 0.05; < 0.1 (suggestive).
view that foreign firms are more inclined to integrate training as part of a corporate strategy for exploiting technology for productivity gains.

As for market adaptability, price competitiveness and product quality strategies, there are more similarities than there are differences. Apart from the only statistically significant (at 0.05 level) correlation of top management training with market adaptability (indigenous sample only), none of the other correlations are found to be significantly related. This suggests that firms show little inclination to integrate training as a component of strategies such as market adaptability, price competitiveness or product quality.

With respect to the structural variables, there is in general an observable, greater consistency than there are differences in the pattern of correlations. Still, the difference lies in a pattern of stronger and more highly significant correlations of role specialization (productivity manager) for the indigenous firms, with training across the hierarchical levels of the organization. This suggests that where productivity improvements are more structured, indigenous firms tend to emphasize human resource skills training to a greater extent than in foreign companies.

The involvement of the CEO in productivity improvements is found to have only a weak significance with regard to training across the top management, middle management and supervisory grades. In the case of the foreign sample, the only potentially significant correlation is with training at middle management level. Whilst no definitive statements can be made, given the weak significance of these correlations, some speculative remarks can be made in light of the importance of the CEO’s role in the firm. A greater involvement and commitment by the CEO in productivity improvements within the indigenous firms is more likely than in foreign corporations to result in a greater emphasis on the training of top, middle and supervisory staff. If so, this further implies that CEOs in indigenous firms tend to take a more people–skills orientation towards improving productivity.

Discussion

On the basis of these descriptive results, some conclusions can be drawn. There appears to be some statistical support for the culture–free thesis, given the paucity of significant differences found between East and West samples in the individual perceptual measures of emphasis on the various means to productivity improvement (except for strategy variables). The lack of significant differences could be attributed to one or both of these possibilities.

The yearly productivity campaigns may have actually narrowed the gaps in productivity practices between the indigenous and foreign-owned firms. If so, snapshots of these practices as the campaigns continue are likely to yield even narrower differences. Indeed, it may be possible that there is a systematic ‘inflation’ in the scores of the Singaporean sample,
since indigenous firms may be expected to exhibit greater enthusiasm for national campaigns, and their members may give an overly optimistic view of what has been done (Foo and Chan 1990). Detailed investigations of controlled samples are needed to determine whether this is indeed true. Subject to the caveats in interpreting the extent of the differences, the tendency in the findings, however, clearly suggests that there is greater emphasis in mainly Western, foreign-owned firms on a broad spectrum of means to improving productivity.

It is also possible that, independent of culture, organizations may tend to place greater focus on productivity improvements when operating outside their own cultural (national) milieu. Thus if the Western (being a heterogeneous mix) sample is one consisting of say wholly-owned British organizations operating in Britain, then there will be less consistency in the general direction of these differences and these differences are likely to be less pronounced. Indeed it may be possible, given the lack of such a national productivity movement, that the direction in the differences may be reversed! Whilst the findings are interesting, a tighter match of samples is needed before any conclusive statements can be made as to the cultural effects.

What is intriguing are the correlation results which suggest that there remains detectable traces of cultural influence on organizing. For example, in seeking to improve productivity, Western management tends to integrate training more strongly, both as a product-range strategy as well as in the use of technology. On the other hand, Eastern management in seeking productivity improvements seems to relate training more to organizational planning and personnel systems. Thus, the sharpest contrast seems to lie in terms of structural interrelationships between human resource training and other organizational attributes emphasized in the process of productivity improvement.

It should be realized that the statistical findings reported here tend to be understated, since the foreign sample comprises joint-venture organizations as well as being diluted by the presence of two Japanese corporations. These imperfections aside, the real value of these exploratory findings lies in drawing broader implications from the general pattern of the correlation results. Empirical research, which attempts to test either the culture-bound or culture-free thesis, has been aptly described as nightmarish given the complexity (Lammers and Hickson 1979). Thus, the need for a simplifying conceptual scheme.

A Molecular Perspective

As an abstraction, an organic, dynamic 'molecular' structure of organizational response to productivity improvement is developed here (see Figure 1) to reflect schematically the broad, general pattern of significant interrelationships found between the human resource training and the other components of organizational structure. The configuration suggests
Figure 1: Molecular Perspective of Organizational Structure

Key: Organization Boundary
Significant Relationship (0.05)
that, despite the exposure of the Western organizations to the Singapore (locale effects) environmental influences from the national productivity campaign, there remain basic differences in the molecular (structural) interrelationships.

Western cultural values could act as an effective organizational boundary to filter off locale influences. Thus, although within the sample of indigenous organizations there seems to be a greater interrelationship (implying interdependence) between human resource training with the planning and personnel systems as well as productivity per se, this is apparently lacking in Western-owned organizations. In contrast, Western-owned organizations seem to interrelate human resource training more with technology and the overall corporate strategic direction. This lack of interrelationships between training with the personnel system variables such as incentives, gain-sharing or information-sharing or with planning in terms of target-setting, use of productivity indicators or performance feedback on productivity is clearly consistent with the general findings of Pascale and Athos (1981). Part of the explanation, for example in a general lack of interrelationships of training with hierarchical differentiation in productivity improvement, may be said to lie in the subsidiary status of the corporations that make up the foreign sample. However, the evidence here is suggestive of a more fundamental difference in East-West approaches to structuring towards productivity improvement.

At this stage, perhaps some rather speculative, general comments could be made of the East-West approaches to organizing for productivity improvement. Eastern culture may well emphasize organizationally a more integrated, interdependent approach to human resource management and skills development in enhancing productivity. Western management, on the other hand, tends, organizationally, to structure training as part of an overall corporate strategy as well as being linked up with the organization's particular technological orientation. Eastern structural approaches to productivity tend to be inclined towards more of a humanistic, adaptive posture, whilst Western management is more mechanistic (labour doing perhaps what technology is unable to do efficiently or effectively) and strategy-directed, or 'hard'.

The typology developed by Burns and Stalker (1961) of mechanistic vis-à-vis organic organizational processes is relevant here. This study suggests that apart from environmental conditions which change the stability and therefore influence the nature of organizational processes, culture (Western-Eastern) is another explanatory factor. Thus, given a similar environment, Eastern organizational processes are likely to be less mechanistic than their Western counterparts.

**Suggestions for Future Research**

This research is not without its limitations. Certainly a more elaborate
research design is needed to overcome some of the imperfections. Though the samples are found to be rather similar in respect of size as well as hierarchical level of the respondent, other controls (where sub-sample size still permits meaningful statistical analysis) may need to be instituted to ensure a better match, for instance in terms of the product or industry type. Earlier research, for instance (Foo 1990), found contexts such as size, charter and ownership to influence the relative ranking of emphasis on productivity improvement practices. There is a need for a more tightly controlled Western sample, for instance of wholly-owned European or American corporations managed by Westerners. This calls for an extension of the sample size to include a larger number of organizations so as to permit the simultaneous institution of multiple controls. Further refinement to the survey instrument could be made to allow the testing of possible biases in respondents' age, gender or ethnic background. Also, later research design could use scores aggregated from multiple respondents for each organization, rather than tapping the perceptions of a single respondent.

In spite of these shortcomings, this research demonstrates the importance of considering in cross-cultural (especially East-West) research, not just the differences in level, but also the rank order and more importantly the pattern of the interrelationships. Given the interesting pattern of correlations of training with organizational productivity improvement variables found in this study, further statistical analysis using tools such as clustering techniques may be employed to explore the configuration of organizational variables, where there is a high versus low organizational commitment to training. In general, cross-cultural researchers should give more emphasis to intersectional research.

Note

* The author wishes to thank O.S and two anonymous referees for the helpful suggestions on earlier drafts of this paper.

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