

**SWP 45/90 A STUDY OF COGNITIVE STYLES
OF AUSTRALIAN MANAGERS**

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A general shift in the management literature from the inanimate (ie. strategy formulation) to the animate (ie. implementation issues) has been observed by Norburn et al (1988). Adaption-innovation theory with which this paper is primarily concerned, is congruent with this development. Adaption-innovation theory also represents a shift away from the focus on levels of creativity and efficiency to the issue of style which is not influenced by intelligence, know-how and scope for individual action, as measures of level have been found to be (Kirton 1984).

Adaption-innovation theory is concerned with differences in the cognitive styles of individuals with particular reference to creativity, problem solving and decision making (Kirton 1976, 1989). The theory provides an insight into the personality aspects of change in organisations (Kirton 1984). Kirton (1984) has summarised the behaviours characteristic of the two cognitive styles:

"Adaptors characteristically produce a sufficiency of ideas, based closely on, but stretching, existing agreed definitions of the problem and likely solutions. They look at these in detail and proceed within the established mores (theories, policies, practices) of their organisations. Much of their effort in change is in improving and "doing better". "Innovators, by contrast, are more likely in the pursuit of change to reconstruct the problem, separating it from its enveloping accepted thought, paradigms and customary viewpoints and emerge with much less expected and probably less acceptable solutions. They are less concerned with "doing things better", "than with doing things differently" (p. 187).

At the organisational level the observation has been made that the task orientations of organisations tend to demand either predominantly adaptive or predominantly

innovative cognitive and behavioural styles. The objectives, climate and culture of the organisation thus exert either adaptive or innovative demands on the members of the organisation (Kirton 1984, Kirton and McCarthy 1988). Organisations that operate in relatively stable and predictable environments tend to be mechanistically structured (Burns and Stalker 1961), local government and banks fall within this grouping, these organisations require continuity and efficiency in relation to managerial skills. Adaptive types are over-represented in these organisations, individuals who are not experience difficulties in performing the tasks required of them (Foxall 1986a, Hayward and Everett 1983, Holland 1987). Market-orientated companies, operating in rapidly changing and thus unpredictable environments tend to be organically structured, requiring managers with the ability to cope with external change and new product development. Managers in such organisations tend to be predominantly innovative (Burns and Stalker 1961, Foxall 1986b, Kirton and Pender 1982).

Within organisations Kirton (1980a) has observed, contrary to the overall orientation of the organisation, certain departments are comprised of managers whose cognitive styles are either predominantly adaptive, where the managerial function is internally-orientated, or predominantly innovative, where the managerial function involves interaction with other departments and external agencies. Kirton found in terms of the KAI means of the members of managerial functions, that engineering occupied a position between the internally-orientated, cost, production, maintenance and service functions and the externally-orientated functions of sales, planning and finance. Further the study revealed that the engineering function could be divided into internally-orientated maintenance, and externally-orientated research and development, subfunctions. The KAI means of the two subfunctions differed significantly: the former score was adaptive and the latter innovative (Kirton 1980a).

Psychological costs are incurred by individuals whose means differ significantly from those of the group of which they are members, these individuals may be in transition, or leave the organisation (Hayward and Everett 1983, Lindsay 1985), or be potential agents for change should they possess the appropriate skills and should a precipitating event arise (Kirton 1988). Conflicts arise between the contrasting cognitive styles when an organisation faces change (Foxall 1986b). Adaptive solutions tend to prevail because they do not challenge the "establishment" within the organisation (Kirton 1980b, 1984). The innovator traits of abrasiveness and insensitivity together with their contrasting views on how an issue should be resolved leads to a conclusion that such types have a much greater propensity to disagree than to collaborate. Adaptors find it easier to collaborate, to establish common agreed guidelines, assumptions and accepted practices on which to base collaboration (Kirton 1984). Innovators are less good at doing so and are less concerned with fitting their solutions to the existing organisational structure and systems. Selection, training and promotion reinforce and perhaps tend to overvalue adaptiveness (Kirton 1980b). Paradoxically adaptor-orientated organisations are likely to require far more extensive changes, when change is needed, because of their focus on current and internal pressures (Kirton 1980b).

Kirton's (1980a) conclusions are drawn from a study of a single organisation; further empirical evidence is required to substantiate these findings and the assertion that a similar dichotomisation would exist within managerial functions other than engineering. In the current research, therefore, empirical data with respect to the cognitive styles of members of managerial functions and subfunctions and their prevailing internal/external task orientations are examined. To broaden the base of the original study of a single organisation, mid-career managers undertaking MBA

programmes from a diverse range of managerial functions and organisations were sought. It has been observed that self-selected course members tend to be more innovative (Kirton and Pender 1982), and mid-career MBA students exhibit higher levels of innovativeness on average than the general population (Foxall 1986b). However, within any group whose mean is observed, subgroups retain their expected differences in scores from one another (Kirton 1980a). As the aim of the research is to establish precisely such inter-group differences the MBA programmes present an acceptable source of managerial respondents.

The current study sets out to confirm the basic propositions of adaption-innovation theory among Australian managers, and develops the findings in two principal ways, firstly to locate the functional areas within the organisation along the adaptive-innovative continuum, and secondly to identify subfunctional adaptive/innovative differences. Interest in adaption-innovation theory has grown rapidly since the mid 1970's with the appearance of some 113 related publications, with a further 36 in progress; completed theses number 33, with a further 20 in progress (Kirton 1989). The earlier KAI based research focused on description and classification of the two cognitive styles. More recently investigators have been concerned with the distributions and identification of distinctive patterns; the focus of the current study. Little KAI research in Australia has been undertaken with the exception of a study by Gul (1986) among final year accountancy students.

The Kirton Adaption-Innovation Inventory (KAI), comprises a 32 item test to which the respondent indicates on a five point scale the ease or difficulty he experiences in maintaining either adaptor or innovator orientated styles of behaviour. The individual's composite score is the sum of scores on three independent sub-scales: the S/O scale (measuring sufficiency vs. proliferation of originality); the E scale

(efficiency); and the R scale (rule conformity). Individuals are then located on a continuum ranging from the highly adaptive to the highly innovative, based upon their total score. Theoretically scores may range from 32-160, with a mean of 96. The observed range of the British population is 46-145, with an observed mean of 95.33 (N=532, SD=17.54), Kirton (1987). Thus scores below the mid-point on the theoretical scale (96) are considered adaptive, and those above, innovative.

METHOD

Subjects were 123 mid-career managers attending MBA programmes at three Australian Business Schools (Melbourne, Deakin, and Monash Universities) who completed the KAI and supplied a detailed career history in the form of a resume intended for prospective employees. Each resume contained biographical details, qualifications, and a brief statement summarising the respondent's career and the nature of the tasks accomplished. Employment histories, detailing all jobs held since graduation, job titles and the nature of the work involved were included. Job descriptions and responsibilities were also summarised for each employment. Data from this source were cross-validated against MBA application forms where possible.

Resumes were analysed independently by research assistants, in order to determine whether each respondent's task orientation had been primarily internal or external in their career prior to entering business school. The nature of managerial work is such that is not entirely internally or externally orientated, thus to establish the internal or external orientation of each manager in his/her previous career considerable judgement was required to allocate individuals to categories, the criteria used was

based upon a preponderance of either intra- or extra-paradigmatic elements, particularly in the most recent employment.

Internally and externally orientated managerial tasks were identified within three broadly-defined managerial functions. Accountants were found for instance to be concerned with auditing and the presentation of internal accounts (internal orientation), or with financial planning and appraisal of projects and ventures (external orientation). In more detail the internally orientated or cost accountants were concerned with routine auditing, the preparation of company accounts, the operation of budgetary control systems, and the implementation of internal controls and cost recording; whereas the externally orientated of financial accountants were concerned with corporate finance, financial planning, generic capital appraisal, systems review and financial modelling as well as the design and management of information systems and the supervision of large-scale audits.

Engineers were either principally concerned with maintaining existing systems (internal orientation), or with planning, and design (external orientation). Hence the internally orientated or technical engineers were concerned with project administration, remedial work, materials management and control, onsite technical supervision, cost control, efficiency and quality control, and the provision of technical support, plant installation and monitoring; whereas the externally orientated or managerial engineers were concerned with project planning and inauguration, the negotiation of contracts, liaison with clients, resolution of contractual issues, R & D work, consultancy and design.

General managers were found to be either concerned with administering internal operating systems (internal orientation), or were involved in the direction of the

organisation and its external relationships (external orientation). So that the internally orientated or administrative general managers were concerned with the operation of one or a few related department(s) involving such tasks as budgeting, training, office management, records administration, and coordination; whereas the externally orientated or directive general managers assumed overarching responsibility for corporate level planning and strategy, the determination of strategic scope and direction, corporate missions and overall performance appraisal.

Due to the small sample size of operations/production and marketing managers it was impossible to identify sub-functions. However it was apparent from the resumes that the former group reflected a preponderance of intra-organisational orientations, whilst the latter revealed predominantly extra-organisational orientations. The operations/production managers were predominantly concerned with the achievement of production targets, quality control, materials procurement and stock control, maintenance of production systems, computer control of stock systems and the monitoring of production operations; whereas the marketing managers were concerned with market planning, strategic market analysis, product development, creation and coordination of the marketing mix, and the commissioning of market research. In the analysis, each internally orientated sub-function was compared with the corresponding externally orientated sub-function, and the marketing managers were compared with the operation/production managers.

RESULTS

As anticipated respondents' mean scores inclined towards the innovative, with a mean score of 106.12 (SD=13.82), the Cronbach alpha of .84 indicates high internal reliability, corresponding to the findings of other investigators for general population and managerial samples (Kirton 1987b). The three broadly-defined managerial functions - accountants, engineers, and general managers - are located on the adaptive-innovative continuum, between the internally orientated operations/production function and the externally orientated marketing function, depicted in Table 1.

(Take in Table 1)

Differences between the mean scores of the internally and externally orientated subfunctions of the three broadly-defined managerial groups are significant (Table 2). The difference between the means of all internally orientated as against all externally orientated managers is also significant.

(Take in Table 2)

DISCUSSION

Reviewing the results it is apparent that the basic propositions of adaption-innovation theory are confirmed by the sample of Australian managers undertaking MBA courses. In addition to engineering, the functions of accounting and general management occupy a ranking, based on the mean KAI scores between the internally-orientated operations/productions function and the externally-orientated

marketing function. The results indicate subfunctional differences; accounting, engineering and general management functions can be separated into internally and externally orientated subfunctions. As anticipated mean scores are significantly higher (ie. more innovative) for the members of externally-orientated subfunctions relative to their internally-orientated counterparts.

Expected patterns of task orientations and cognitive style are confirmed, supporting Kirton and McCarthy's (1988) finding that managers tend to be drawn towards organisational climates and occupations most congruent with their personality characteristics and preferred style of cognitive functioning. The presence of both adaptive and innovative cognitive styles within broadly-defined managerial functions challenges reliance on single managerial stereotypes, particularly in the application of selection and task defining tools such as job descriptions.

The implications of adaption-innovation theory at the individual, functional and corporate level are almost inextricably inter-linked when viewed against the background of the uncertain, dynamic environment Saul (1987) suggests faces most sectors of the Australian economy. The author has observed a shift in Australian public and private sector organisations from management as administration, to management as leadership. Where management by administration is defined as rational - not concerned with human aspirations, feelings or psychological needs, but concerned with eliminating surprises and controlling deviations from fixed standards of performance in order to achieve efficiencies. In contrast management by leadership is concerned with inspiring employees to excellent performance by creating and communicating a vision of a desirable future, proactive management; encouraging surprises which add value to the organisation. Where corporate success

results from a strong corporate culture of shared values and objectives, involving all stakeholders in their formulation and implementation.

Saul's (1987) observations suggest a shift from the traditional management paradigm, characterised by adaptive traits, to an emergent paradigm valuing innovative qualities and importantly the contribution of all stakeholders. The complexities of the highly competitive and rapidly changing environment in which business operates demands "innovation from everyone" Peters (1988, p.275) and the proactive creation of strategies for turbulent change Norburn et al (in press). The corporate task is onerous, as Saul (1987) has observed, "The encouragement of innovation and risk taking requires virtually the opposite organisational characteristics that are required to ensure high levels of operational efficiency in a stable environment" (p. 83).

However, many organisations may find that only occasionally is an innovative input required and rely for the most part on sustained adaptive inputs. Adaption-innovation theory supported by the findings reported above, contends that not all managers are engaged in the pursuit of relentless change; the cognitive and behavioural styles of many managers would indicate contrary preferences, and Kirton (1987a) contends, "it is unlikely, as well as undesirable, that any organisation is so monolithic in its structure, and so undifferentiated in the demands it makes on its personnel, that it produces total uniformity of cognitive style" (p. 297). The life cycle stage of the organisation and thus the strategic directions the firm may adopt may determine a predominant need for either entrepreneurial or integrative cognitive styles (Matherly and Goldsmith 1985) - strategic change may require either an adaptive or innovative solution. If Peter's (1988) view is accepted with respect to organisations facing increasingly chaotic environments, it seems that innovators may

be best placed to deal with the external environment, whilst adaptive cognitive styles are more suited to the management of the internal operations of the organisation.

Adaption-innovation theory raises awareness of the contrasting styles of information processing, problem solving and preferred modes of working of individuals. A greater understanding of the cognitive styles typified should be acknowledged in strategic prescriptions for corporate change and in training and recruitment. Management style, organisational climate and communications processes, Barry and Dowling (1984) suggest are critical areas determining the future success, or otherwise of Australian industry and commerce. Adaption-innovation theory has as its focus these very processes and thus provides an important perspective for both psychologists and managers.

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Table 1 KAI Means for Broadly-Defined Managerial Functions

Function	N	KAI Mean	SD
Marketing	6	122.33	10.03
General Management	58	105.71	12.82
Engineering	36	105.56	14.69
Accounting/Finance	16	104.13	13.45
Operations/Production	7	103.14	15.49
TOTAL	123	106.12	13.82

Table 2 Comparison of KAI Means for Internally-Orientated and Externally-Orientated Subfunctions

Internally-Orientated				Externally-Orientated					
Sub-Group	N	KAI	SD	Sub-Group	N	KAI	SD	t	p*
Cost Accountants	9	96.11	8.74	Financial Accountants	7	114.83	11.41	3.64	.0025
Technical Engineers	16	96.50	11.93	Management Engineers	20	112.80	12.70	3.96	.000
General Management: Administrative	26	98.15	8.80	General Management: Directive	32	111.84	12.37	4.91	.000
Operations/Production	7	103.14	15.50	Marketing	6	122.33	10.03	2.68	.000
TOTAL	58	97.89	10.58	TOTAL	65	113.39	12.29	5.39	.000

* difference between means, one-tailed test.