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The effects of person–innovation fit on individual responses to innovation

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Drawing on the person–environment fit literature, we propose that cognitive comparisons between person and innovation on meaningful dimensions determine organizational members' affective and behavioural responses to innovations. Specifically, we hypothesize that two different types of person-innovation fit constructs (value fit and ability fit) differentially predict employees' commitment to implementation and implementation behaviour. The results of this study indicate that congruence between innovation values and personal values is more strongly related to employees' commitment to implementation than to implementation behaviour, whereas the congruence between required abilities and current abilities is more strongly associated with implementation behaviour than with commitment to implementation. In addition, commitment to implementation was more strongly associated with environmental characteristics (innovation values), whereas implementation behaviour was associated more strongly with personal characteristics (personal values, current abilities). This study expands the person–environment fit and innovation implementation literature by applying the fit concept to a new domain and by identifying and testing cognitive processes that determine employees' affective and behavioural responses to innovations.

Contemporary organizations are continually reshaping themselves in response to a rapidly changing environment by introducing more new technologies and business practices than ever before (Jick, 1995). Implementing innovations is a challenging, high-risk task for many organizations. For example, the failure rate of business process re-engineering efforts has been evaluated at roughly 50–80% (Hammer & Champy, 1993). Most studies of innovation implementation have attended to organizational factors, such as organizational structure (Clayton, 1997), support systems (Klein & Sorra, 1996), organizational culture (Clayton, 1997), leader characteristics (Van de Ven & Grazman, 1997), and implementation strategies that promote implementation success (Leonard-Barton, 1988). For instance, if an organization uses inadequate implementation

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strategies such as singularly technology-driven strategy without employee involvement, this implementation effort is likely to fail (Majchrzak, 1988).

Due to this emphasis on organizational-level factors emanating from a top–down perspective of implementation, the individual-level processes of innovation implementation have often been ignored. Nevertheless, research has shown that employee reactions to a particular innovation actually determine the ultimate success of implementation efforts (Hartwick & Barki, 1994; Leonard-Barton, 1988). Many attempts to implement advanced manufacturing technologies fail to improve the targeted manufacturing processes simply because an insufficient proportion of the organizational members complied with the planned change (Majchrzak, 1988). Many innovations have failed not because of their technical deficiencies, but due to lack of acceptance and use by organizational members (Clayton, 1997). Therefore, an understanding of how employees respond to an ever-increasing number of innovations is important to both managers and researchers.

In line with previous research efforts that have been successful in explaining many workplace behaviours (e.g. motivation, leadership, resistance to change, see Hodgkinson, 2003), researchers have attended to cognitive processes that might be responsible for employees' reactions to innovations. For example, the technology acceptance model (Davis, 1989) posits that a person's behavioural intention to use an innovation, and actual usage of that innovation, are determined by two factors: perceived ease of use and perceived usefulness. Social cognitive theory (Compeau, Higgins, & Huff, 1999) endorses a similar set of beliefs that includes technology self-efficacy and outcome expectations as determinants of innovation use. Based on these theoretical frameworks, empirical studies have examined the cognitive processes that determine people's affective and behavioural responses to various innovations (Compeau *et al.*, 1999; Hartwick & Barki, 1994; Karahanna, Straub, & Chervany, 1999). These studies, however, focus on a set of attitudinal or individual difference variables without considering plausible underlying mechanisms that might produce those favourable cognitive states (e.g. perceived ease of use).

The present study extends the innovation literature by proposing and empirically testing a psychological mechanism by which employees may shape their responses to innovations. With the increasing confluence of cognitive science and work and organizational psychology (Hodgkinson, 2003), a more sophisticated cognitive account of employee behaviour related to innovations makes a timely contribution to the field. Specifically, we propose that the degree of fit between person and innovation on several meaningful dimensions predicts employee attitudes and behaviour related to an innovation. In this study, we refer to an individual's affective response to an innovation as *commitment to implementation* and define it as 'belief in a particular innovation and willingness to exert considerable effort in its implementation' (adapted from Mowday, Porter, & Steers, 1982). We refer to an employee's behavioural response to an innovation as *implementation behaviour* and define it as 'an individual's consistent and committed use of a particular innovation' (adapted from Klein & Sorra, 1996).

This study also expands the person–environment fit literature by applying the person–environment fit theory to a new content domain of innovation, and by investigating differentiated effects of two versions of fit (Edwards, 1996) on affective and behavioural outcomes, which were implied in the literature but not yet properly tested. Below, we elaborate the significance of person–innovation fit in predicting individual-level outcomes of innovation implementation. We also develop hypotheses linking two different types of person–innovation fit constructs to both commitment to

implementing an innovation, and implementation behaviour. We then test the hypotheses using data collected from a large electronics company.

Person–innovation fit in values and abilities

The person-environment (P-E) fit literature has proposed that a good fit between people and their environment (e.g. job, organization, vocation) on relevant dimensions (e.g. task requirements, organizational culture, vocational characteristics) induces greater commitment, more positive affective experience at work, and enhanced performance (Kristof, 1996). The degree of P-E fit has proven to be a significant predictor of many individual outcomes, including employment interview outcomes and turnover intentions (Cable & Judge, 1997).

Significance of the fit concept in individual responses to innovations

We draw on the P-E fit literature to explain how people respond to innovations and propose 'person-innovation fit' as a predictor of individual-level implementation outcomes. In our framework, the innovation comprises an important external stimulus to which a person must adapt. In a sense, innovations, particularly when adopted by top management and imposed on employees, constitute a part of the task environment, which requires employee responses. For this reason, we argue that compatibility between person and innovation increases the willingness of an individual to accept and use the innovation.

Drawing on the innovation implementation literature (e.g. Clayton, 1997; Klein & Sorra, 1996), we identify two innovation attributes that comprise defining characteristics of an innovation. The first attribute, *innovation values*, refers to values and goals underlying an innovation as perceived by users (DeSanctis & Poole, 1994). For example, assembly technologies may endorse particular values related to the nature of time, space, human beings, and their relationships that are quite different from those endorsed by more flexible manufacturing technologies based on autonomous work teams (Schein, 1992). The second attribute, *required abilities*, refers to skills, knowledge, and technical expertise necessary to implement the innovation (Clayton, 1997). When implemented, each innovation imposes different types and levels of technical requirements for successful use.

Thus, the comparison between person and innovation may be made in two aspects: (a) comparison between innovation values and personal values (hereafter, *value fit*), and (b) comparison between abilities required by the innovation and a person's current abilities (hereafter, *ability fit*). These two person-innovation fit constructs are consistent with the two generic types of fit identified in the P-E fit literature (Edwards, 1996; Kristof, 1996). The first type is 'supplies-values fit' (S-V fit), which is present when the environment provides values that are compatible with a person's preferences or needs, as in the case of fit between innovation values and personal values. The second type of fit is 'demands-abilities fit' (D-A fit), which occurs when people have the skills, knowledge, and abilities that are required by their environment, as in the case of fit between abilities required by an innovation and those possessed by an individual.

Value fit

Values represent relatively stable beliefs held by individuals about what is good, right, or desirable (Rokeach, 1973, p. 5) and, therefore, influence employees' attitude and behaviour. Because values prescribe a preferred state of affairs, people are attracted to

objects or people that represent a similar set of values, whereas they feel uneasy with objects or others that hold incompatible values (Meglino & Ravlin, 1998). For this reason, in the presence of a strong value-congruence, we are more likely to form a positive appraisal of the object or person in question (Ajzen, 1991). In addition, engaging in value-congruent behaviour requires less cognitive effort than engaging in value-incongruent behaviour (Festinger, 1964).

We thus expect that value fit (e.g. the congruence between innovation values and personal values) is positively related to employees' affective and behavioural responses to an innovation. Under conditions of high value fit, accepting and using the innovation requires a minimum cognitive adjustment and effectively reinforces one's own personal values. It is thus hypothesized that employees will be more committed to an innovation and be more likely to use it when it promotes values that are congruent with their own values.

Hypothesis 1a. The greater the congruence between innovation values and personal values, the greater the strength of commitment to implementation.

Hypothesis 1b. The greater the congruence between innovation values and personal values, the greater the performance of implementation behaviour.

Ability fit

Implementing new work procedures and technologies often requires employees to acquire new skills, knowledge, and experience (Clayton, 1997). For example, advanced manufacturing technologies based on computerized systems effectively eliminate simple, routine tasks and increase the complexity of the remaining jobs, which in turn require a greater level of user abilities such as computer literacy, a clear understanding of the logic behind the system, and procedures to be applied in the case of system failure (Zammuto & O'Connor, 1992). In these cases, employees who do not have required abilities such as computer literacy may feel threatened by the new technology and hesitate to incorporate it into their job.

It is thus natural that when new procedures or practices are added to their work environment, employees compare the technical demands of the innovation with their current skills (ability fit). When their current ability level is equal to or greater than the required level, employees may believe that they can use the innovation without much difficulty (cf. perceived ease of use, Davis, 1989). When employees believe they can fulfil the technical requirements of the innovation, they develop a high expectation of the link between effort and performance, which in turn increases their motivation toward that behaviour (Vroom, 1964). In contrast, when the required level of ability is too high relative to the current level, use of the innovation seems implausible or only possible with great difficulty, and individuals may develop negative beliefs regarding the innovation and undervalue the potential benefits of using it (Reger, Gustafson, Demarie, & Mullane, 1994). Thus, we hypothesize the following relationships.

Hypothesis 2a. The greater the congruence between abilities required by an innovation and current abilities of a person, the greater the strength of commitment to implementation.

Hypothesis 2b. The greater the congruence between abilities required by an innovation and current abilities of a person, the greater the performance of implementation behaviour.

Differential effects of value fit and ability fit on affective and behavioural outcomes

Previous studies have examined the impact of value fit (S–V fit) and ability fit (D–A fit) on many affective outcomes, such as job satisfaction, organizational or job commitment, stress or well-being, and intention to leave (e.g. Edwards, 1996; Livingstone, Nelson, & Barr, 1997). In these studies, affective outcomes were found to be more strongly associated with value fit than with ability fit. For example, Cable and Judge (1997) reported that affective outcomes such as job satisfaction and organizational commitment were more strongly related to value fit than to ability fit. Edwards (1996) also suggested that lack of ability fit leads to job strain only when it affects value fit (mediation by value fit of the relationship between ability fit and strain). However, attending to potential divergent effects of different types of P–E fit on various individual-level outcomes, Kristof (1996) speculated that:

> Supplementary (supplies–values) fit on values and goals may be predicted to have a strong effect on affective outcomes because they both involve attitudes, but a lesser effect on individual performance because they are distally removed from daily work behaviors. The opposite effect could be proposed for complementary (demands–abilities) fit on KSAs (i.e. knowledge, skills, and abilities), such that this type of fit would strongly influence daily on-the-job performance. (p. 31)

Although this speculation seems reasonable, direct empirical testing of the possibility of differentiated impacts of the two versions of fit on different types of outcomes has not yet been carried out. The present study examines the potentially distinct effects of value fit and ability fit on affective and behavioural outcomes in the domain of innovation implementation. Specifically, it is hypothesized that implementation behaviour is more strongly associated with ability fit than with value fit and that the reverse relationship holds for commitment to implementation.

Hypothesis 3a. Commitment to implementation is more strongly related to value fit (S–V fit) than to ability fit (D–A fit).

Hypothesis 3b. Implementation behaviour is more strongly related to ability fit (D–A fit) than to value fit (S–V fit).

Method

Research setting and sample

We collected data from a Korean electronics company that has successfully developed, manufactured, and marketed various electronic products worldwide. This electronics company had initiated a new process reengineering project pursuing 'Cyber Culture' within the 6 months preceding our field study. The image of successful implementation of Cyber Culture was a 'paperless office' that could be achieved through information technologies and new work procedures shared among white-collar workers. For example, employees were prompted to replace formal reports with brief e-mails or phone calls and were encouraged to maximize their use of the company intranet and electronic document system for work-related transactions instead of holding face-to-face meetings. Overall, Cyber Culture was designed to enhance professional workers' performance by removing unnecessary procedures and speeding up interactions among workers by drawing heavily on 'cyber tools' such as the intranet and Internet.

A manager of the human resource department of this company was requested to select 300 white-collar workers from a list of current employees and mailed the survey instrument to those selected through company mail. Of this initial sample, 183 employees responded (response rate = 61%) and 178 of them provided usable data. This final sample included 88% males and 38% managers with an average age of 33 years ($SD = 4.80$) and a mean organizational tenure of 8 years ($SD = 4.70$). In terms of functions, 49% of participants performed tasks related to research and development, followed by 32% in various support staff functions, 12% in manufacturing, and 6% in sales and marketing.

Survey instrument

The P–E fit literature has identified two distinct approaches to operationalizing the fit construct. First, the *direct fit* approach relies on individuals' direct judgment of congruence between their personal attributes and environmental characteristics. In this approach, the degree of fit between innovation values and personal values can be assessed by a single question such as, 'Do you think the values promoted by this innovation reflect your own personal values?' (cf. Cable & Judge, 1997). Second, the *indirect fit* (Kristof, 1996, p. 11) approach involves a comparison of two separate measures, each representing comparable dimensions of person and environment. To make this comparison reasonable, scholars have attempted to create commensurate dimensions of person and environment (e.g. personal value and organizational culture).

Both indirect and direct fit approaches carry their own advantages and pitfalls in operationalizing fit constructs (Kristof, 1996). Indirect fit can produce a separate and meaningful demonstration of the internal psychological process of comparison between person and environment (Edwards, 1994). However, it is possible that people make intuitive judgments about a subject rather than going through a process of actual comparison between themselves and the subject in question. Although the direct fit approach has been criticized for its inherent inability to separate the independent effects of person and environment and for potential response bias such as consistency effect (Edwards, 1994), direct fit measures offer unique information that cannot be captured from the indirect fit approach and should perhaps be regarded as the ultimate criterion for the presence of fit in one's mind. In fact, the direct judgment or perception of fit has been found to be predictive of individual outcomes even when indirect fit calculated from its component measures (e.g. individual values and organizational values) did not have any influence (Cable & Judge, 1997). These two approaches to measuring fit have rarely been used together in a study, but in this study we used both approaches because we apply the P–E fit concept to a new domain and it is meaningful to examine how these two types of fit operate differently in relation to the two outcome variables.

In order to properly address the current research questions, it is important to have measures that are sensitive to the nature of the target innovation with respect to its values and technical demands. To reflect the distinct characteristics of the target innovation, we developed measures based on our interviews with innovation experts and target users within the company. We used multiple-item measures for each construct, and all measures showed acceptable levels of internal consistency. Seven-point Likert-type scales were used as response formats across the measures, which are discussed below.

Indirect value fit

Assessing indirect value fit involved a comparison of innovation values with personal values. To make this comparison valid, we created a *commensurate* measure of the two sets of values by using value statements that were relevant to both referents (Edwards, 1996). To this end, we adopted the six values identified by O'Reilly (1989) that promote innovation implementation in organizations. Specifically, we developed one item for each of the six values: (a) 'being flexible enough to take risks and introduce changes' (risk taking), (b) 'developing and experimenting with new ways of problem solving' (change orientation), (c) 'sharing all information with colleagues' (openness in communication), (d) 'having a common sense of direction with co-workers' (sharing common goals), (e) 'having ownership for my work and being responsible for results' (autonomy), and (f) 'being oriented to implementing changes' (belief in action). Participants were instructed to rate these six value statements with regard to (a) their own personal work values ('To what extent do the following statements hold true for your own work values?', 1 = *not at all true* to 7 = *very true*), and (b) the values supported by the target innovation ('To what extent does Cyber Culture promote the following values?', 1 = *not at all* to 7 = *to a great deal*). The six-item scales assessing innovation values and personal values exhibited high internal consistencies of .82 and .89, respectively.

Indirect ability fit

Assessment of indirect ability fit involved a comparison of two measures: required abilities and current abilities. Again, we sought a measure that was commensurate and compatible (Edwards, 1996; Kristof, 1996). Through interviews with the innovation experts, we identified four areas of ability required to implement Cyber Culture: (a) ability to use the Intranet and the electronic document system, (b) ability to identify and prevent unnecessary task procedures, (c) capacity to coordinate task-related issues within and outside the team, and (d) task-related expertise. Participants rated each ability statement twice, once for the extent to which each ability was required to implement Cyber Culture (1 = *not required at all* to 7 = *highly required*) and another for the extent to which they possessed each ability (e.g. 'I can utilize the intranet and the electronic document system at work,' 1 = *not at all true* to 7 = *very true*). Both required-abilities and current-abilities scales showed acceptable internal consistencies of .79 and .78, respectively.

Direct value fit

To measure participants' direct judgment of fit, we adapted Karahanna *et al.*'s (1999) measure of compatibility between an innovation and a person's job. The direct-value-fit scale included two items ('Cyber Culture is congruent with the work style that I prefer' and 'Through Cyber Culture, I can do what I believe important'; $\alpha = .78$) followed by 7-point scales (1 = *not at all true* to 7 = *very true*).

Direct ability fit

Direct ability fit was also measured by a two-item scale ($\alpha = .70$) that included 'I have enough skills and knowledge to implement Cyber Culture', and 'Given my task ability, I don't think it's difficult to implement Cyber Culture in my task.'

Commitment to implementation

Participants' commitment to implementing Cyber Culture was measured by a three-item scale ($\alpha = .75$) composed of the following items: 'I believe that Cyber Culture leads to positive changes in my job', 'I believe that Cyber Culture improves my performance at work', and 'I want to implement Cyber Culture in my tasks.'

Implementation behaviour

Through interviews with internal innovation experts, potential forms of implementation behaviour were identified and then transformed into survey items that measured the extent to which participants implemented Cyber Culture in their work. We developed a seven-item scale ($\alpha = .83$) that measured the intensity of six appropriate behaviours (e.g. 'I heavily use the electronic document system at work', 'I make my task procedures simple and speedy') as well as the overall level of implementation effort ('Overall, I perform behaviours that enhance Cyber Culture in my company'). All items were rated on 7-point scales, ranging between *not at all true* and *very true*.

Results

In this study, both the predictors and criterion variables were based on self-report data from the same source, which raises a concern regarding common method variance. Prior to hypothesis testing, therefore, we examined the psychometric properties of the present measures by following the procedure suggested by Anderson and Gerbing (1988). A confirmatory factor analysis of the present eight latent factors indicated by 34 items resulted in an acceptable model fit to the data, $\chi^2(df = 499) = 762.33, p < .001$; CFI = .89, RMSEA = .06. Moreover, all measurement items were significantly loaded to their respective latent factors (all $p < .001$), indicating convergent validity of the measures. In addition, no confidence intervals of covariances among the latent factors (phi) included a value of 1 (all $p < .001$), indicating discriminant validity of the measures. Nevertheless, it should be noted that the present data are not free of concerns regarding self-report data such as social desirability, consistency motive of respondents, and resulting boosted correlations among variables (Podsakoff & Organ, 1986).

Table 1 presents means and standard deviations of the study variables and correlations among them. We examined correlations between indirect fit measures and direct fit measures. Direct value fit was related to both innovation values and personal values ($r = .25, p < .01$ and $r = .16, p < .05$, respectively), and these two correlations were not significantly different (difference test by Fisher r-z transformation, $t = 1.23$, $p > .20$). Ability fit was more closely associated with current abilities than with required abilities ($r = .52, p < .001$ and $r = .24, p < .01$, respectively; difference test, $t = 3.99$, $p < .001$). These patterns indicate how overall perceptions of fit (direct fit) are related to their component measures.

Polynomial regression analyses of indirect fit data

To test the present hypotheses with indirect fit data, we conducted a series of polynomial regression analyses (Edwards, 1994, 1996), in which linear and curvilinear effects of predictors on the outcome are examined in a hierarchical manner. In these analyses, we scale-centred predictors in order to reduce multicollinearity among them. When significant interactions among the predictors are present, Edwards (1996)

Table 1. Means, standard deviations, and correlations

Variables	*M*	*SD*	1	2	3	4	5	6	7	8
1. Innovation values	4.94	0.82	–							
2. Personal values	4.09	0.72	.35***	–						
3. Required abilities	4.37	0.85	.24**	.29***	–					
4. Current abilities	4.22	0.73	.25**	.55***	.24**	–				
5. Value fit	4.29	1.06	.25**	.16*	.13	.09	–			
6. Ability fit	4.17	0.91	.27***	.42***	.24**	.52***	.20**	–		
7. Commitment to implementation	4.33	0.92	.44***	.27***	.17*	.21**	.78***	.30***	–	
8. Implementation behaviour	4.11	0.78	.34***	.60***	.29***	.55***	.26***	.44***	.39***	–

*$p < .05$, **$p < .01$, ***$p < .001$.

recommended a visual examination of their relationships with regard to the outcome through plotting the data points on a three-dimensional response surface for a better interpretation of the results. This method effectively separates the distinct contributions of each of the two measures of indirect fit that may differentially relate to the outcomes.

Indirect value fit

To examine the effect of indirect value fit, personal values and innovation values were entered into the equations predicting commitment to implementation and

Table 2. Polynomial regression analysis of indirect fit data

Dependent variable	Commitment to implementation		Implementation behaviour	
Model	Linear	Curvilinear	Linear	Curvilinear
Indirect value fit				
PV (Personal values)	.14	.14	.54***	.65***
IV (Innovation values)	.39***	.28*	.15*	−.09
PV^2		−.08		−.16
PV * IV		.05		−.01
IV^2		.13		.34**
R^2	.21***	.22***	.38***	.43***
ΔR^2		.01		.05**
Indirect ability fit				
CA (Current abilities)	.18*	.20	.51***	.40**
RA (Required abilities)	.13	−.01	.16*	.00
CA^2		−.02		.09
CA * RA		−.04		.06
RA^2		.20		.13
R^2	.06**	.08***	.33***	.35***
ΔR^2		.02		.02

*$p < .05$, **$p < .01$, ***$p < .001$.

Note. Entries are standardized regression coefficients.

implementation behaviour (see the first row in Table 2). Of the two values, only innovation values were significantly related to commitment to implementation. In contrast, although both values were linearly related to implementation behaviour, the effect size of personal values was significantly greater than that of innovation values (effect size difference test: $F(1, 175) = 17.61$, $p < .001$). An examination of the three-dimensional plots also showed that commitment to implementation is linearly and positively related to innovation values, whereas implementation behaviour is more strongly associated with personal values (plots available from the first author). Overall, the results suggest strong positive linear effects of the two values on different outcomes (innovation values on commitment, personal values on implementation behaviour), instead of positive affective and behavioural outcomes associated with congruence between personal values and innovation values. Thus, Hypothesis 1a and Hypothesis 1b were not confirmed by the indirect value fit data.

Indirect ability fit

The second row in Table 2 presents the results of polynomial regressions using our two measures of indirect ability fit – that is, required abilities and current abilities. In regard to commitment to implementation, the effect sizes of the two measures were not different (effect size difference test: $F(1, 174) = .31$, $p > .50$), although only current abilities reached the conventional significance level. In regard to implementation behaviour, however, current abilities comprised a much stronger predictor than required abilities (effect size difference test: $F(1, 174) = 15.83$, $p < .001$). Apparently, current abilities had a dominant effect on the behavioural outcome of innovation implementation, whereas the two measures of indirect ability fit exerted small, but relatively comparable, effects on the affective outcome.

Regression analyses of direct fit data

For the direct fit data, the hypotheses were collectively tested by two sets of regression equations for the two outcomes. As presented in Table 3, both direct value fit and ability fit were significantly related to both outcomes, indicating that employees' direct judgment of value fit and ability fit had implications for both the attitudinal and behavioural outcomes. Direct fit data, thus, supported Hypothesis 1a, Hypothesis 1b, Hypothesis 2a, and Hypothesis 2b.

Table 3. Regression analysis of direct fit data

Dependent variable	Commitment to implementation	Implementation behaviour
Direct value fit	.74***	.19**
Direct ability fit	.15**	.40***
R^2	.62***	.23***

*$p < .05$, **$p < .01$, ***$p < .001$.
Note. Entries are standardized regression coefficients.

Differential impacts of value fit and ability fit

Hypothesis 3a and Hypothesis 3b predict that commitment to implementation is more strongly associated with value fit, whereas implementation behaviour is more strongly

related to ability fit. To test these hypotheses, the amounts of explained variance (R^2) in the indirect fit data were compared, and the effect size differences between the two types of fit in the direct fit data were examined. The results based on the indirect fit data (R^2 comparison) warrants a caution because, as reported above, the effects of the two measures of each fit construct did not confirm the hypothesized fit relationships. In this case, therefore, the interpretation should be framed as the comparison of the combined effects of the two measures of a fit construct, rather than comparison of the strengths of fit effects. With this caution in mind, Table 2 shows that commitment to implementation was better explained by the indirect value fit measures than by the indirect ability fit measures ($R^2 = .22$ vs. .08, respectively; multiple correlation difference test, $t = 2.46$, $p < .05$; Hypothesis 3a confirmed). Implementation behaviour, however, was not more strongly related to indirect ability fit measures than to indirect value fit measures ($R^2 = .35$ vs. .43, respectively; multiple correlation difference test, $t = .85$, $p > .30$), failing to support Hypothesis 3b.

Table 3 reports regression coefficients of direct fit data that are consistent with Hypothesis 3a and Hypothesis 3b. Statistical tests of the effect size differences confirmed that direct value fit held a greater effect on commitment to implementation than did direct ability fit (effect size difference test: $F(1, 158) = 54.54$, $p < .001$, Hypothesis 3a supported), and the reverse pattern was significant for implementation behaviour ($F(1, 158) = 5.15$, $p < .05$, Hypothesis 3b supported).

Discussion

This study proposed and tested a set of hypotheses concerning person–innovation fit constructs that predicted employees' affective and behavioural responses to innovations. Examining comparable aspects of both person and innovation is critical for understanding micro-level processes of innovation implementation because a person's attitude toward and behaviour involving a target (e.g. the organization, tasks, innovations) represent the results of implicit cognitive comparisons between the self and the target (Edwards, 1996). Using data from an electronics firm, this study revealed that person–innovation fit constructs are associated with individual-level outcomes of innovation implementation. Furthermore, the results suggest that two measures of direct fit may play distinct roles with respect to the affective and behavioural responses to innovations, and that the two versions of P–E fit (value fit vs. ability fit) may relate to different outcomes. Below we discuss implications of these results and suggest directions for future research.

The present results suggest that different types of fit predict different types of individual outcomes. Previous studies have examined the impact of these two types of fit on a series of affective outcomes (job satisfaction, organizational or job commitment, stress or well-being) and concluded that value fit is more strongly related to these affective outcomes than is ability fit (Edwards, 1996). The existing literature, however, has not addressed empirically how a person's behaviour is influenced by the two versions of fit. Confirming Kristof's (1996) speculation, our results indicated that value fit and ability fit are differentially associated with affective and behavioural outcomes, respectively: a comparison of explained variance in commitment to implementation (Table 2) and statistical tests of effect size differences between value fit and ability fit in predicting the two outcomes (Table 3) supported Hypotheses 3a and 3b, which propose differentiated effects of S–V (value-related) and D–A (ability-related) versions of fit. This pattern implies that the two types of fit are more likely to be related to their

domain-relevant outcomes (S–V or value fit to affective/psychological outcomes, D–A or ability fit to behavioural/performance outcomes), rather than competing to explain the greater variance in the same outcomes.

Another intriguing, but unexpected, pattern that emerged from the data is the possibility that either the person or the environment becomes a dominant predictor of particular outcomes, instead of the fit between the two. According to the findings from the indirect fit measures (Table 2), commitment to implementation was most strongly predicted by innovation values, whereas implementation behaviour was predicted relatively strongly by both personal values and current abilities. Similarly, in their study of P–E fit in the domain of creativity, Livingstone *et al.* (1997) tested 14 polynomial regression equations predicting three affective outcomes and found that environmental characteristics (supplies or demands) were significant in 13 equations, but personal characteristics (values or abilities) were significant in only one equation. Based on this pattern, they concluded that environmental characteristics should be the focus of any managerial interventions.

The present findings, however, indicate that Livingstone *et al.*'s conclusion emphasizing the role of the environment might be valid only for affective outcomes, and that personal characteristics (personal values, current abilities) may play a critical role in behavioural outcomes such as implementation behaviour. Therefore, if the primary goal of implementing a particular innovation (e.g. advanced manufacturing technologies, process reengineering) is changing employees' behaviour relating to new practices and procedures, an effective implementation strategy may be to increase personal resources in terms of skills or attitudes related to the innovation. In fact, Clayton (1997) also reported that implementation of 'hard' technologies is promoted by boosting employees' personal resources through training, mentoring, or manuals.

This study has several limitations that suggest opportunities for future research. Because our data were collected in a Korean electronics company, the present findings may have limited generalizability to different cultural contexts, such as US firms or less technology-intensive industrial settings. Moreover, the fact that we collected data from only one organization might have reduced variations in reported as well as actual values and abilities of individuals due to either selection or socialization. This reduced variation could be a reason why we could not detect interactions between person and environment variables.

In addition, the present findings are based on cross-sectional self-report data collected from the same source and thus might be confounded with several biases that can accompany this type of data (Podsakoff & Organ, 1986). Moreover, the causal directions among the variables cannot be determined from the data. For example, direct ability fit could be the consequence of successful performance of implementation behaviour, rather than the cause (Lindsley, Brass, & Thomas, 1995). These and other variables in this study are likely to be linked by dynamic and complex causality, influencing each other over time through multiple feedback loops. This limitation calls for longitudinal studies that track the introduction and implementation of innovations over time, and which employ independent behavioural and performance measures reported by third parties.

Finally, the measures of indirect value fit used in this study were not sufficiently customized to the target innovation (Cyber Culture) because we adopted a set of general values improving innovations in organizations (O'Reilly, 1989). This lack of specificity could hinder a proper assessment of critical values of both the target innovation and individuals that might have more substantial influence on employee responses to the

innovation. Person–environment dynamics may be stronger and more meaningful in dimensions that are salient and relevant for both the person and environment. Future studies may reveal more sophisticated relationships between person and environment through the use of measures that are customized to the particular context.

The present findings suggest that the implications of P–E fit are not as simple and straightforward as has often been assumed in the literature. They raise a question regarding the usual expectation that a high degree of P–E fit will lead to favourable individual outcomes (Edwards, 1996; Kristof, 1996), and highlight the need for further theoretical development concerning the roles various aspects of P–E fit constructs play in determining different types of individual outcomes. Future studies may expand and clarify the present findings, which suggest complex interactions among different versions of P–E fit (S–V vs. D–A fit), different roles of personal (values, abilities) and environmental characteristics (supplies, demands), and different types of individual outcomes (affective, behavioural, performance outcomes). Further theoretical and empirical efforts would enrich our understanding of innovation implementation and organizational change by offering microprocess-based accounts of these phenomena that complement the existing literature, which has heretofore been largely devoted to organizational-level analyses.

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