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Alternative models for the relationship among leadership, organizational citizenship behavior, and performance: a study of new product development teams in Taiwan. Cheng-Cheng Ling Tai^a, Che-Ming Chang^b, Jhao-Yu Hong^c, Li-Chun Chen^d, b*

d^a^b^c^d^e^f^g^h^i^j^k^l^m^n^o^p^q^r^s^t^u^v^w^x^y^z^A^B^C^D^E^F^G^H^I^J^K^L^M^N^O^P^Q^R^S^T^U^V^W^X^Y^Z

Abstract

Research and management practices show there is a correlation between the type of management and employee performance. However, in the new production environment, the effect of management style and organizational citizenship behavior on employee performance is still unknown. This paper seeks to explore the mediating role of “organizational citizenship behavior” (OCB) in the relationship between “transformational leadership”, “transactional leadership”, and “ethical leadership” and performance. The sample was taken from new product development teams in Taiwan’s small and medium enterprise (SME). A total of 400 questionnaires were handed out with a total 210 valid questionnaires for a return rate of 52.5%. Using multiple regression hypothesis testing, the results showed that different factors affect performance, among which transformational leadership and transactional leadership has a significant impact on performance through OCB. These results and research implications will be discussed in the article.

Keywords: Transformational leadership, transactional leadership, ethical leadership, organizational citizenship behavior

1. Introduction

In the face rapid change in the environment and consumer demand, competition between businesses has become increasingly competitive. The development of new products has become the most profitable and most heavily invested department for corporations. However, the path of new product development is never smooth. The success rate for developing new products has maintained a mere 60% [1]. To combat this low rate of success, scholars have explored a variety of factors in raising the success and performance in new product development, such as the personality of the team leader [2], and the effects of the stage of development of the new product and information technology on the ultimate performance of the product [3].

Studies have shown that in order to improve performance, character traits and type of the leadership both play an important role. This is due to that leaders are in direct contact with employees and thus affect them directly. However, different employees may exhibit different behaviors under different types of leadership styles. Bass believes transactional leaders use economic, political, and psychological methods to interchange the expectations (or goals) of the employee and the leader or

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managers [4]. On the other hand, transformational leaders place emphasis on employees and leaders sharing each other’s goals, “to transform and elevate their motivation, conduct and ethical aspirations”.

The ethical leader, from Brown, Treviño and Harrison, is defined as “using personal action and interpersonal interactions as an example to promote followers to strengthen implementation and decision-making behavior through two-way communication.” [5]. What difference various leadership styles have on employees is still up for debate. There are only a few pieces of literature linking ethical management with employee performance [6]; this article draws on the previous three and will try to fill this academic void.

With the improvement of employee knowledge and quality, there has been an outpour of research regarding self-motivation, self-efficacy, OCB, and the like. High priority has often been placed upon the role of OCB in achieving performance [7]. At the core of these studies has been the emphasis of whether employees will voluntarily engage in activities outside of their ‘work roles’ [8]. For the product development team, the interesting issue here is this: out of the different leadership styles, which kind will influence employees to improve their OCB? What kind of leader plays a more important role in the creative process for product development? Also, does leadership style and OCB contribute to overall employee performance?

In order to answer these questions, the purposes of this study is as follows: 1. To analyze the role OCB plays in the relationship between transformational leadership, transactional leadership, ethical leadership and performance; 2. To investigate the direct affects of the previous three types of leadership styles have on performance.

2. Literature review and research hypotheses

2.1. Leadership

Leadership is a kind of behavior, and it is also the physical manifestation of a type of relationship. Leadership styles also vary vastly in different organizations. Bass recognized leadership as a way to change subordinates, create a vision that can reach goals, and establish a clear path to actually achieve goals [9]. Different leadership styles often influence or change employee behavior in different ways. Burns believes that transformational leadership uses the role of leadership to change original values, organizational culture, interpersonal relationships, and patterns of behavior. Through this process of change, followers will begin to hold the organization’s interests above individual interests to hold a common goal, and thereby inspire in followers self-consciousness about their job performance [10]. Mackenzie, Podsakoff and Rich believe transformational leaders motivate employees to work beyond their own expectations, increase the value and importance employees place on the task at hand, and inspire employees to place the interests of the organization above their own [11]. Transformational leadership comprises four dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration [9]. It can be derived from the above that leaders who engage in transformational leadership are good at establishing a vision so that employees will value organizational performance and positively influence employee performance through their leading role.

Burns believes transactional leadership originates from the viewpoint of social exchange; its relationships are based on social contracts and the aim is to maintain the stability of the organization, placing stress on the employee’s basic needs and external needs [10]. Bass believes transactional leadership is based on economic, political, or psychological exchanges of value [4]. To achieve their respective goals the leader and employee trade their needs; a direction is set through discussion, compromise, role clarification, and job requirements. At the same time, the leader guides and motivates their employees to work and meet their needs. Bass believes transactional leadership is constructed on contingent reward and management-by-exception [9]. The transactional leader does not utilize their authority but rather the process of persuasion to obtain the compliance of their subordinates, and therefore leaders should recognize the efforts of their employees with rewards and positive recognition. On the contrary, a leader also must have the ability to give corrective advice and punishment [4]. It can be derived from the above that transactional leaders exchange goals with their employees and utilize the reward system and exception management to change employee behavior.

The demands of both ethical awareness and product interest are challenges that managers face. Ethical leadership was born from this trend. The ethical leader should establish a model for appropriate behavior and use reward and punishment to stimulate a sense of morality. After Brown and Treviño explored the literature on ethical leadership, they came to the conclusion that the ethical leader is honest and trustworthy [12]. In addition, the ethical leader is considered fair, a decision-maker who
cares about people and society and a person who behaves morally in his professional and personal life. De Hoogh and De Hartog divide ethical leadership into three aspects: fairness, power sharing, and role clarification [13]. In their questionnaires for the further development and validation of the ethical leader, Kalshoven, De Hartog and De Hoogh used the original three aspects from [13] and added four more aspects: people orientation, integrity, ethical guidance, and concern for sustainability [14]. It can be derived from the above that ethical leaders have high ethical values and behave morally, leading by example. Employees use the leader as their example and strive to achieve their individual tasks to achieve employee performance.

Transformational leadership is considered to be a representative leadership style and its impact is often included within confirmation research to be discussed. Transactional leadership emphasizes the exchange of purpose between the leader and the subordinate, showing the impact of organizational rewards system and management by exception. It can be described as the management style most suited to current industries. Ethical leadership is an emerging leadership style which effects on improving performance has yet been verified, which is why it is the subject of this article.

2.2 Organizational citizenship behavior (OCB)

Organ points out that OCB is behavior initiated voluntarily by that an organization’s employees, in order not only fulfill their obligations and tasks but also take voluntary actions, sacrifice the self to help others and go beyond their original roles [8]. Smith, Organ and Near point out that while “employees are willing to stay in the organization” and “achieving the performance allocated to the employee’s job role within the organization” are behaviors within the work roles, “actively perform behavior outside the employee’s work role and implement organizational innovation” are behaviors outside of the work role [15]. These behaviors include collaboration with colleagues, self-enhancement, and the creation of an aggressive team image. From this we can see that employees engaging in OCB have the best interests of the organization at heart. Within this concept, employees will value the organization’s interests above their own and avoid any decisions or actions that might detract from the organization’s interests. At a time when organizations are seeking to cultivate employees who can adapt to unexpected situations, help themselves as well as help others, and even learn by analogy, OCB provides a possible direction.

2.3. Alternative models for the relationship among leadership, OCB, and performance

Earlier studies imply two types of models for explaining the relationships among leadership, OCB, and performance. In this study, we shall refer to these models as (1) Mediating Effect Model, and (2) Antecedent Model, and will be described in the following sections.

2.3.1 Mediating Effect Model.

Many articles about performance often stress the high correlation between OCB with performance. Using this assumption, leadership style might indirectly affect employee performance through its impact on OCB. Therefore, the assumption places the focus on whether the formation of performance needs to be achieved through OCB. It also stresses OCB as the antecedent of employee performance, and that OCB plays the role of the intermediary between leadership style and performance. Thus, its difference from Model 2 is that leadership style does not have a direct impact on performance but rather affects the level of OCB, which in turn affects performance.

According to the literature, leadership style has a positive impact on OCB [16]. This means that leadership style may shape or form an employee’s OCB; OCB is often an important factor in improving performance. Studies have shown that OCB can increase overall effectiveness of the organization [17]. If we proceed with the premise of encouraging OCB for the improvement of performance, and leadership style also has an influence on the attainment of performance objectives, this article proposes:

H1.1: OCB is the mediate variable between transformational leadership and product quality.
H1.2: OCB is the mediate variable between contingent reward and product quality.
H1.3: OCB is the mediate variable between management-by-exception and product quality.
H1.4: OCB is the mediate variable between ethical leadership and product quality.

2.3.2 Antecedent Model
Different from Model 1, this model shows the direct impact of leadership style and OCB on performance, also ruling out the role of other factors in the aforementioned relationship. In this model, leadership style and OCB will directly affect performance. There have been many explorations and empirical research on this model in previous literature, such as Rowold and Heinitz pointing out that transformational leadership and transactional leadership has a positive effect on improving performance in their assessment study of MLQ-5X and CKS [18]. The Lee, Cheng, Yeung and Lai study of transformational leadership, team performance, and service quality found that transformational leadership has a positive impact on performance [19]. In addition, the Menges, Walter, Vogel and Bruch study on organizational levels believes transformational leadership has a positive impact on an organization’s morale [20]. On the other hand, Walumbwa, Mayer, Wang, Wang and Workman point out ethical leadership has a positive effect on the self-efficacy of an organization’s members [6]. Therefore, based on the above findings, this article believes that leadership style and OCB directly affects performance. [23] We propose:

**H2.1:** transformational leadership is positively associated with product quality.

**H2.1:** contingent reward is positively associated with product quality.

**H2.3:** management-by-exception is positively associated with product quality.

**H2.4:** ethical leadership is positively associated with product quality.

**H2.5:** OCB is positively associated with product quality.

### 3. Research method

#### 3.1. Sampling

Respondents to the questionnaires were restricted to those who worked in new product development in Taiwan SME. Convenient sampling was undertaken as a fast and easy way to collect data. A two-wave emailing method, supplemented by an email reminder, was adopted in data collection. A total of 400 survey questionnaires were sent out, of which 210 were completed and returned, representing a 52.5% return rate.

#### 3.2. Questionnaire development and measures

The authors employed questionnaires developed by previous studies with proper modifications to suit the environment of NPD team of Taiwan SME, and their research objectives. All multi-item variables in this study were measured using a five-point Likert scale: 1 for total disagreement and 5 for complete agreement.

In this study, product quality, measurement scales developed by [3] were derived to probe into the quality of new products compared with competitors' current and responding firm's previous products. Transformational leadership, defined according to [21], which reflected the identifying and articulation a vision, the modeling appropriate role behavior, and the fostering acceptance of group goal aspect of core transformational leadership behavior. Transactional leadership was borrowed from [22] which consisted of two separate aspects: contingent reward and management- by-exception. Ethical leadership, defined according to [5], which was the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making. OCB was derived from [21] to identify and implement organizationally functional changes with respect to work methods, policies, and procedures within the context of its jobs, stores, or organizations.

### 4. Results

#### 4.1 Sample description

The characteristics of the sample showed that most respondents were male (male 67.6%; female 32.4%), under 30 years old (64.8%), with university degree (48.6%), and participated in electronic industry (35.7%), and belonged to R&D department (35.2%). And most teams were consisted of 11-15 members (28.6%); the cost rate for research and design were over 15% (27.1%). Most respondents were engineers (37.6%), with work experience within 1-3 years (44.3%).

#### 4.2 Adequacy of measures
In addition, the construct validity can be supported by testing the loading of each construct that is loaded at least 0.4 on their respective hypothesized components through a confirmatory factor analysis (CFA). The results of CFA also show that transactional leadership should be separated into two dimensions: management-by-exception and contingent reward. So in the following procedure, management-by-exception and contingent reward are treated as two different independent variables to test our hypotheses.

The authors conducted the reliability analysis by way of Cronbach’s alpha coefficient to measure the internal consistency reliability of the constructs. Alpha reliabilities of these scales range from 0.6 to 0.9 demonstrating acceptable consistency. Table 1 displays the correlation matrix.

### Table 1. Correlation matrix

<table>
<thead>
<tr>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1. Translational leadership</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Contingent reward</td>
<td>.544**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Management-by-exception</td>
<td>.382**</td>
<td>.374**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Ethical leadership</td>
<td>.701**</td>
<td>.536**</td>
<td>.468**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. OCB</td>
<td>.320**</td>
<td>.143*</td>
<td>.265**</td>
<td>.264**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6. Product quality</td>
<td>.401**</td>
<td>.387**</td>
<td>.312**</td>
<td>.314**</td>
<td>.487**</td>
<td>1</td>
</tr>
</tbody>
</table>

### 4.3 Model specification and estimations

In this study, the authors performed four regression analyses to analyze their hypotheses. They are presented as follows.

Model 1: OCB is the mediate variable between leadership styles and product quality

(4) OCB = β₀ + β₁ (transformation leadership) + β₂ (contingent reward) + β₃ (management-by-exception) + β₄ (ethical leadership) + ε

(4) Product quality = β₀ + β₁ (transformation leadership) + β₂ (contingent reward) + β₃ (management-by-exception) + β₄ (ethical leadership) + ε

(4) Product quality = β₀ + β₁ (transformation leadership) + β₂ (contingent reward) + β₃ (management-by-exception) + β₄ (ethical leadership) + β₅ (OCB) + ε

Model 2: The leadership styles and OCB are positively associated with product quality:

(4) Product quality = β₀ + β₁ (transformation leadership) + β₂ (contingent reward) + β₃ (management-by-exception) + β₄ (ethical leadership) + β₅ (OCB) + ε

### 4.3.1 Results of regression analyses

Table 2 shows the results of the test. All of the F-statistics are significant at the p < 0.001 level, thus showing good fit of the models to the data, whereas the constructs account for a sizable proportion of the variance in dependent variables.

In Table 2, the authors use product quality as a dependent variable. The results of testing Model 1 (H1.1)-(H1.4) involved four regression analyses are as follows: (1) Transformational leadership (β = 0.278, p < 0.01), and management-by-exception (β = 0.177, p < 0.05) are positively related to OCB. (2) OCB is positively related to product quality (β = 0.487, p < 0.001). (3) Transformational leadership (β₁ = 0.266, p < 0.01), contingent rewards (β₂ = 0.217, p < 0.01), and management-by-exception (β₃ = 0.159, p < 0.05) are positively related to product quality. (4) The relationship between transformational leadership, management-by-exception and product quality was weakened by the inclusion of OCB (β₁ dropped from 0.266 to 0.156, and β₃ dropped from 0.159 to 0.089). Since conditions (1)-(4) were supported, it follows that H1.1 hypothesis—“OCB is the mediate variable between transformational leadership and product quality.”, and H1.3 hypothesis—“OCB is the mediate variable between management-by-exception and product quality.” are supported. H1.2 and H1.4 hypothesis—“OCB is
the mediate variable between contingent reward, ethical leadership and product quality.” are not supported.

In Model 2, a multivariate model is used to examine the influence of a combination of these variables on job satisfaction and product quality. In Table 2, H2.1, which hypothesizes that the use of transformational leadership is positively associated with product quality, is supported ($\beta = 0.156$, $p < 0.1$). H2.2, which hypothesizes that the use of contingent reward is positively associated with product quality, is supported ($\beta = 0.254$, $p < 0.001$). H2.3, which hypothesizes that the use of management-by-exception is positively associated with product quality, is not supported. H2.4, which hypothesizes that the use of ethical leadership is positively associated with product quality, is not supported. Likewise, H2.5, which hypothesizes that the use of OCB is positively associated with product quality, is supported ($\beta = 0.398$, $p < 0.001$).

### Table 2. Results of regression analysis.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Model 1</th>
<th>Dependent variable</th>
<th>Regression(1)</th>
<th>Regression(2)</th>
<th>Regression(3)</th>
<th>Regression(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OCB</td>
<td>Product quality</td>
<td>Product quality</td>
<td>Product quality</td>
<td>Product quality</td>
<td></td>
</tr>
<tr>
<td>Transformational leadership</td>
<td>0.278**</td>
<td>0.266**</td>
<td>0.156+</td>
<td>(2.928)</td>
<td>(2.956)</td>
<td>(1.859)</td>
</tr>
<tr>
<td>Contingent reward</td>
<td>-0.094</td>
<td>-0.177*</td>
<td>0.254***</td>
<td>(2.374)</td>
<td>(2.248)</td>
<td>(3.618)</td>
</tr>
<tr>
<td>Management-by-exception</td>
<td>0.177*</td>
<td>0.159*</td>
<td>0.089</td>
<td>(2.366)</td>
<td>(2.063)</td>
<td>(0.917)</td>
</tr>
<tr>
<td>Ethical leadership</td>
<td>0.056</td>
<td>0.487***</td>
<td>0.398***</td>
<td>(0.056)</td>
<td>(0.681)</td>
<td>(0.220)</td>
</tr>
<tr>
<td>OCB</td>
<td>7.804***</td>
<td>64.711***</td>
<td>22.739***</td>
<td>(8.044)</td>
<td>(6.607)</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.132</td>
<td>0.237</td>
<td>0.220</td>
<td>0.342</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.132</td>
<td>0.237</td>
<td>0.220</td>
<td>0.137</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

+p<0.1, *p<0.05, **p<0.01, ***p<0.001

5. Conclusions and Discussion

Our results indicate that transformational leadership indirectly influences product quality via enhanced OCB. If transformational leadership and OCB coexist, surprisingly, transformational leadership directly influences product quality. We consequently recommend that companies put more effort into the cultivation of leaders with transformational leadership qualities. Apart from strengthening employee OCB and thereby increasing their motivation to discharge the tasks assigned by the organization, this will also directly boost product quality via the exercise of leadership skills!

Our results indicate that contingent reward cannot directly influence product quality via OCB. By contrast, if contingent reward and OCB coexist, contingent reward systems have the most direct influence on product quality. This also implies that providing compensation and bonuses enhances product quality. We therefore recommend that companies establish fair, effective reward systems able to incentivize positive behavior and penalize negative behavior, which will boost product quality.

Our results show that management-by-exception directly influences product quality via OCB. Moreover, if management-by-exception and OCB coexist, management-by-exception has no significant impact on product quality. We therefore recommend that companies establish effective supervisory systems to improved voluntary employee behavior, and then employee performance will also increase.

Our results show that ethical leadership can not influence product quality via OCB. If ethical leadership and OCB coexist, ethical leadership has no significant impact on product quality. This indicates that employees do not agree with ethical leadership. However, this will not result in improved quality. We therefore recommend that companies do not rely on ethical leadership to boost product quality, while simultaneously employing appropriate quality control actions to improve product quality.

Our results indicate that when employees complete their tasks, and voluntary and actively assist others, this will simultaneously enhance their product quality. We therefore recommend that companies take advantage of management methods and their corporate culture to reinforce employee OCB, which will achieve product quality.

In regards to further academia, because this study only examined three types of leadership, we recommend that future research compare additional leadership styles, and also add other factors that
may influence performance, such as creativity, individuals’ skills, and values, to see if this will yield different results.

References


