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COMPETING MODELS OF HOW MOTIVATION, OPPORTUNITY AND ABILITY DRIVE PERFORMANCE BEHAVIOURS

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The motivation–opportunity–ability (MOA) framework is well established in organizational behaviour and specifies complementarity among motivation, opportunity, and ability in driving behaviour. Despite decades of research, the precise inter-relationship among the MOA variables and how they interact to influence performance behaviours still remain largely unclear. Three competing models, a multiplicative, linear and constraining-factor model (CFM), reflecting different levels of complementarity and interaction among motivation, opportunity and ability, and their impact on performance behaviours are specified. These models offer fresh perspectives on interaction effects in organizational behaviour and on how to drive performance in organizations. To test the specified competing models, a quantitative methodology appears appropriate. This will require operationalizing the MOA as well as the performance behaviour variables and measuring them through quantitative questionnaire surveys. Subsequent empirical test of the competing models will confirm whether the constraining-factor model (CFM) is a superior model that provides a better explanation of the variance in performance behaviours than the traditional multiplicative and linear models.

Keywords: ability to perform, constraining-factor model (CFM), motivation to perform, opportunity to perform, performance behaviours

INTRODUCTION

Performance has long been viewed as a function of *motivation* (M) and *ability* (A) (c.f. Vroom 1964). Peters and O'Connor (1980) and subsequently Blumberg and Pringles (1982) however contend that an often overlooked additional function of performance is "*opportunity to perform*" (O), "the particular configuration of the field of forces surrounding a person and his or her task that enables or constrains that person's task performance and that are beyond the person's direct control" (Blumberg and Pringle, 1982, p. 565). While support for the role of ability and motivation in performance is particularly profound, that of opportunity is often less explicit. In many work situations however, persons who are both motivated and capable of successfully accomplishing tasks, may either be inhibited in or prevented from doing so due to situational constraints beyond their control (Peters and O'Connor, 1980). This assertion is supported by the findings of Ford *et al.,* (1992) that lack of opportunity to perform tasks is related to performance decrements. Opportunity to

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perform is therefore often described under the label of situational or operational constraints (Peters and O'Connor, 1980, Mathieu *et al.,* 1992, Bendoly and Hur, 2007).

The MOA framework has since become an established theoretical basis for explaining work performance (Blumberg and Pringle, 1982; Boudreau *et al.,* 2003). It has been used previously for example to explain behaviours such as consumer choice (MacInnis *et al.,* 1991), firm-level decision making (Wu *et al.,* 2004), social capital activation (Adler and Kwon, 2002; Binney *et al.,* 2006), knowledge-management practices (Argote *et al.,* 2003) and more recently knowledge sharing behviours (Siemsen *et al.,* 2008).

From a work performance theory perspective, motivation, opportunity and ability (MOA) play complementary roles in influencing behaviour (Cummings and Schwab, 1973). Hence, without ability or opportunity, motivation alone should not lead to performance behaviour (Blumberg and Pringles 1982, Siemsen *et al.,* 2008). Yet, there is little empirical evidence supporting the existence of such complementarity (Terborg, 1977). The key question that arises therefore is: if, as work performance theories predict, there is complementarity among motivation, opportunity, and ability in driving behaviour, why have existing empirical tests of the MOA framework often fail to reveal this complementarity? (c.f. Siemsen *et al.,* 2008). Siemsen *et al.* (2008) grappled with this puzzle and subsequently proposed and tested a constraining-factor model (CFM) as an alternative to the traditional multiplicative model in explaining the link between MOA and knowledge sharing. The CFM captures the notion that in the absence of any of the MOA variables no action takes place, but further that it is the minimum among the three factors (i.e. motivation, opportunity and ability) that ultimately determines behaviour (Siemsen *et al.,* 2008). Apart from Siemsen *et al.* (2008) however, researchers have yet to test the validity of the competing MOA models with regards to other behaviours or actions beyond knowledge sharing or with regards to performance behaviours specifically. Indeed, Peters and O'Connor (1980) speculated on the development of competing models for explaining performance variance when they state that "While substantive progress has been made in accounting for performance variance in terms of ability and motivation variables, it may be that a more complete understanding of performance variance must await the specification and measurement of additional variables that either directly affect performance or indirectly contribute to explained variance in performance through their interactions with measures of ability and motivation." (p. 391). Drawing on Siemsen *et al.* (2008) therefore, three competing models, a multiplicative, linear and a constraining-factor model (CFM), reflecting different levels of complementarity and interactions among motivation, opportunity and ability and their link to performance behaviours are specified. In the sections that follow, the theoretical basis of the three competing models is explained. Subsequently, methods for comparing the competing models are proposed followed by a discussion and outline of implications for theory and practice.

THEORETICAL DEVELOPMENT OF COMPETING MODELS

The MOA framework

Motivation, opportunity, and ability (MOA) are related constructs (Blumberg and Pringle, 1982). The precise inter-relationships among the MOA variables is however often difficult to justify theoretically, hence, they can be viewed as correlated but distinct constructs (c.f. Siemsen *et al.,* 2008). How the MOA variables interact to influence performance behaviours is the subject of this paper. The issue of complementarity of the MOA variables is therefore central to the development of the competing models. Complementarity is defined as the degree to which the effect of one variable depends on the presence of other variables (Siemsen *et al.,* 2008). Moderate complementarity implies that the effect of one variable depends on another variable while extreme complementarity implies that one variable has no effect unless the other variable is present (Siemsen *et al*., 2008). Three competing models, a multiplicative, linear and constraining-factor model (CFM), reflecting different levels of complementarity and interactions among motivation, opportunity and ability, and their impact on performance behaviours are specified next.

Competing models

Classic work-performance theories hypothesize moderate complementarity among the MOA variables by projecting that action is a multiplicative function of motivation, opportunity and ability (Maier, 1955, Vroom, 1964, Blumberg and Pringle, 1982). From this perspective, motivation, opportunity, and ability must all be present to some degree for an action to occur, and lower values of any one of these factors are hypothesized to strongly reduce action (Blumberg and Pringle, 1982, Siemsen *et al.*, 2008). From this perspective, the first competing model, the "*multiplicative model*", can be specified as follows;

$$\text{Performance Behaviours} = \beta_0 + \beta_1 M + \beta_2 O + \beta_3 A + \beta_4 M \times O + \beta_5 M \times A + \beta_6 O \times A + \beta_7 M \times O \times A + \varepsilon \quad (1)$$

Moderate complementary is implicit in the multiplicative model as specified above whereby the effect of motivation, opportunity or ability depends on continuous changes in the other two variables. Yet, work-performance theories (c.f. Cummings and Schwab, 1973) provide little justification for this continuous change. While the multiplicative model has been subjected to empirical scrutiny (c.f. Cummings and Schwab, 1973) however, there is little empirical evidence that the multiplicative terms explain significantly more variance than the linear terms alone (Campbell and Pritchard, 1976, Terborg, 1977). Interestingly, even though this multiplicative model has never been empirically validated, it is still frequently applied in conjunction with the MOA framework (Siemsen *et al.*, 2008). In fact, Bell and Kozlowski (2002, p. 497) refer to it as a ''truism.'' The common understanding is that moderate complementarity among motivation, opportunity, and ability ought to exist, even if such complementarity has never been empirically established in a rigorous manner (Siemsen *et al.*, 2008). This situation and the corresponding implications are aptly summarized by Cummings and Schwab (1973, p. 46) when they state that:

"*Someone with no ability to complete a task cannot successfully perform no matter how highly motivated he may be to do so…….. It is, however, much less clear that the notion of interaction contributes to the predictability of employee performance in applied settings where employees may be assumed to possess some minimal amount of both ability and motivation. A simple additive approach will probably enable us to predict performance just about as well.*"

Cummings and Schwab (1973) therefore appear to suggest that performance behaviour can be predicted equally well by a model that does not capture potential complementarity between the MOA variables at all. The second competing model from this perspective can therefore be specified as a "*linear model*" as follows;

$$\text{Performance Behaviours} = \beta_0 + \beta_1 M + \beta_2 O + \beta_3 A + \varepsilon \qquad (2)$$

Although there is some theoretical evidence to suggest that motivation, opportunity, and ability are complementary in driving behaviour, existing empirical evidence from work-performance theories suggests that little explanatory power is gained by adding interaction terms (c.f. Cummings and Schwab 1973). Siemsen *et al.* (2008) therefore suggest that a different model of complementarity is called for. They propose an alternative model referred to as the constraining-factor model (CFM). The CFM captures the notion that in the absence of any of the MOA variables no action takes place, but it does not additionally impose a continuous change in the size of the effect (Siemsen *et al.* 2008). Mathematically, the CFM emphasizes extreme complementarity instead of the moderate complementarity emphasized by the traditional multiplicative model. The CFM is specified as follows:

$$\begin{aligned}\text{Performance Behaviours} = {} & \beta_0 + \beta_1 M + \beta_2 O + \beta_3 A + \\ & \delta_O(\beta_4 + \beta_5 M + \beta_6 O + \beta_7 A) + \\ & \delta_A(\beta_8 + \beta_9 M + \beta_{10} O + \beta_{11} A) + \varepsilon \qquad (3)\end{aligned}$$

Where the variables δ_O and δ_A are dummy variables that are defined to be 1 if O (or A, respectively) is the minimum of M, O, and A, and 0 otherwise. The theoretical perspective the CFM captures is that of a bottleneck, or a limiting resource perspective (Schmenner and Swink, 1998, Chase *et al.,* 2004). It is the minimum among the three factors of motivation, opportunity, and ability that ultimately determines behaviour (Siemsen *et al.* 2008). Other theoretical analogies for CFM can be found in the theory of constraints (Goldratt, 1999) and the theory of queuing networks (e.g., Kulkarni, 1995) and factory physics (Hopp and Spearman, 2000). The CFM allows for the effects of the constraining factor to differ depending upon which variable is the constraining factor (e.g., $\beta_1 \neq \beta_6 \neq \beta_{11}$), and for the intercepts to differ depending upon which variable is the constraining factor ($\beta_4 \neq \beta_8 \neq 0$).

From the specifications above, it can be deduced that equation (2) is nested in equations (1) and (3). Similarly, equations (1) and (3) are nested in the following more general, "combined" model that includes both moderate and extreme complementarity:

$$\text{Performance Behaviours} = \beta_0 + \beta_1 M + \beta_2 O + \beta_3 A + \delta_O(\beta_4 + \beta_5 M + \beta_6 O + \beta_7 A) + \delta_A(\beta_8 + \beta_9 M + \beta_{10} O + \beta_{11} A) + \beta_{12} M \times O + \beta_{13} M \times A + \beta_{14} O \times A + \beta_{15} M \times O \times A + \varepsilon \quad (4)$$

This combined model enables a comparison of the multiplicative model and the CFM.

TESTING THE COMPETING MODELS

To test the competing models specified above, a quantitative methodology appears appropriate. This will require operationalizing the MOA as well as the performance behaviour variables and measuring them through quantitative questionnaire surveys. Tuuli (2009) provides some operationalization of these variables which could provide a starting point. *Opportunity to perform* could be measured by adapting the 11-item organizational constraints scale ($\alpha = .85$) developed by Spector and Jex (1998), which covers each of the situational constraint areas proposed by Peters and O'Connor (1980). Two potential constraint areas specific to the operational circumstance of construction projects could be added; the need to comply with safety requirements and statutory regulations. *Intrinsic motivation* could be assessed with Hackman and Oldham's (1976) 6-item internal work motivation scale ($\alpha = .75$). *Ability to perform* could also be operationalized with the 7-item subscale ($\alpha = .76$) of ability, experience, training and knowledge (AETK) developed by Podsakoff *et al*. (1993).

The MOA competing models could then be tested with regards to their impact on two performance behaviours; task and contextual performance behaviours. *Task performance behaviours* could be measured with the 6-item scale ($\alpha = .91$) of employee in-role behaviours (IRB) developed by Williams and Anderson (1991). *Contextual performance behaviours* could also be assessed with an adapted version of Van Scotter and Motowidlo's (1996) 15-item scale [*interpersonal facilitation* (7 items; $\alpha = .93$) and *job dedication* (8 items; $\alpha = .95$)].

With regards to empirically comparing the competing models Siemsen *et al.* (2008) provides an analysis strategy that could be adopted. Based on the discussions and specifications in the previous section, the CFM will be expected to explain more variance in the performance behaviours than the linear model while the multiplicative model will be expected not to explain more variance than the linear model. In addition, adding the multiplicative terms to the CFM model will not be expected to explain significantly more variance in performance behaviours than the CFM. Lastly, adding the CFM terms to the multiplicative model will be expected to explain more variance in performance behaviours than the multiplicative model. Various fit statistics could also be employed to assess which model fits the data better.

DISCUSSION AND IMPLICATIONS

This paper set out to specify competing models for examining the link between the MOA variables and performance behaviours. Despite decades of research, the precise inter-relationships among the MOA variables and how they interact to influence performance behaviours still remain largely unclear. Three competing models, a

multiplicative, linear and constraining-factor model (CFM), reflecting different levels of complementarity and interactions among motivation, opportunity and ability, and their impact on performance behaviours were specified. These models have the potential to offer fresh perspectives on how to promote performance in organizations. In so far as traditional MOA models make no assumptions about how to prioritize investments in motivation, opportunity or ability in organizations (Siemsen *et al.,* 2008), a test of computing models provides a path towards specifying such priorities for interventions. This has implications for managerial interventions aimed at improving performance in teams and can provide targets of concrete managerial interventions.

This paper adds to the growing interest in alternative views on interaction effects in organizational behaviour (c.f. Siemsen *et al.,* 2008, Casimir and Ng, 2010). While the topic of interactions remain particularly important as it affects issues of practice, theory and metatheory (Blalock, 1965, Cronbach, 1987), ample evidence from research conducted in diverse fields (e.g. management accounting and workplace motivation) indicate that the product-term (which measures interaction) fail consistently to detect interactive effects even when there are sound theoretical reasons for expecting such effects (Paunonen and Jackson, 1988; Russell and Bobko, 1992). Competing models such as those specified here should therefore go a long way to offering alternatives to examining interactions among variables of interest in organizational research.

This study also has the potential to provide the much needed empirical support for a comprehensive model of work performance that takes into consideration not only motivation and ability but also opportunity to perform. Preliminary findings by Tuuli and Rowlinson (2009b) show that the link between empowerment and performance behaviours becomes even stronger with the MOA variables are taken into account as mediators; explaining additionally 1% to 7% of variance in task performance behaviours and 4% to 11% in contextual performance behaviours, over and above that explained by psychological empowerment alone. While opportunity to perform has traditionally been less explicit in work performance models, opportunity to perform actually emerged as a stronger mediator in the psychological empowerment-contextual performance behaviours relationship than ability to perform (Tuuli and Rowlinson, 2009b). Opportunity to perform may therefore emerge as the forgotten hero in the work performance framework and provide a path to enhancing work performance in organizations.

Lastly, this study has the potential to add to our understanding of the important determinants of task (in-role) and contextual (extra-role) performance behaviours in construction project settings. Indeed, the fundamental issues surrounding performance in construction have been identified as organizational and behavioural in nature (Courtney and Winch, 2003, Slevin and Pinto, 2004) and behaviour in particular, still remains an area of management concern that has not received much focus in construction industry related research (Cox et al., 2005). Yet, the sparse research efforts in this direction continue to highlight the significant impact of behaviour on project outcomes (e.g. Ahadzie *et al*. 2008; Anvuur 2008; Cheng *et al*. 2007, Phua, 2004).

CONCLUSION

Competing models for explaining the link between the MOA variables and performance behaviours have been specified. It remains to be seen whether subsequent empirical test following the methodology specified above would confirm the constraining-factor model (CFM) as a superior model that provides a better explanation of the variance in performance behaviours than the traditional multiplicative and linear models. Siemsen *et al.* (2008) offer preliminary findings supportive of this expectation.

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