

## **The antecedents to commitment in information systems development projects**

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### **ABSTRACT**

Within the field of information systems, understanding project success has garnered much attention. A key factor with the potential to impact project outcomes is commitment to project objectives. As information systems projects are inherently complicated and often end in failure, there is a need to understand as much as possible to help with the management of the project process. This research study examines personality variables and implementation mindset as antecedents to predict the commitment to project objectives. Additionally, this study examines the existence of a higher order personality variable defined as positive self-evaluation comprised of self-efficacy, self-esteem, locus of control, and neuroticism. Results of a survey administered to 232 individuals working on information systems development projects support the existence of a higher order construct and reveal that higher levels of positive self-evaluation impact commitment to project objectives directly and indirectly through its influence on implementation mindset. The study explains 38% of the variance in commitment to development project objectives. Directions for future research and implications are presented.

Keywords: development, project management, commitment to objectives, goal theory, personality

## INTRODUCTION

Improving the outcomes of information systems (IS) development projects continues to be a priority for industry and research. Projects continue to experience an unwieldy rate of failure, as such, “successful management of IT projects in terms of meeting cost, time, and functionality targets continues to be an elusive achievement” (Taylor, 2006, p. 49). Previous research has focused on several issues associated with the management of successful development projects. A key factor that has not received adequate attention is commitment to the project’s objectives or goals, which has been shown a determinant of project success (Newman and Sabherwal, 1996). Generally referred to as goal commitment, this concept is defined as “one’s attachment to or determination to reach a goal, regardless of the goal’s origin” (Locke, Latham, and Erez, 1988, p. 24; Lee, Keil, and Kasi, 2012). Studies examining commitment to the objectives of a project have shown importance to the overall success of a project, specifically to the quality and performance exhibited by the project team (Hoegl, Weinkauff, and Gemuenden, 2004). “Project commitment creates a positive mood that motivates teams to engage in cooperation with other teams. Information is more willingly exchanged, perspectives of other teams are considered in decision making and innovative ideas are more likely to be discussed with other teams” (Hoegl, et al., 2004, p. 43). In the context of information systems specifically, a few studies have investigated the role of commitment in influencing positive project outcomes (Abdel-Hamid, Sengupta, & Swett, 1999; Andersen, Birchall, Jessen, & Money, 2006; Korzaan, 2009).

It has been suggested that “commitment can clarify the relationship between individual characteristics and the way people undertake particular tasks” (De Clercq, Menzies, Diochon, and Gasse, 2009, p. 124). Predictors of commitment to a project tend to be motivational (Wofford, Goodwin, and Premack, 1992). As noted in goal theory, “a person highly motivated to achieve a goal is more likely to persist in achieving that goal” (De Clercq, et al, 2009 p. 124). It is therefore important to understand the individuals involved in a project to determine levels of commitment to project goals. “Goal commitment is known to increase performance for the following reasons: (1) goal commitment increases the effort an individual exerts toward achieving the goal, (2) goal commitment helps an individual to exert and maintain effort over time, and (3) goal commitment makes an individual unwilling to abandon a goal in the face of a challenge” (Lee, et al., 2012, p. 61-61). In this study, individual team member commitment is evaluated related to achieving the objectives of the IS project which include issues of time, quality, and budget. This exploration is approached through the examination of individual traits and implementation mindset, an important state related to the determination of project outcomes. Specifically an implementation mindset represents the degree to which individuals focus carrying out actions that lead to project goal completion. The following section presents detailed information about the proposed research model (Appendix, Figure 1) as well as the specific hypotheses empirically examined in this study.

## LITERATURE REVIEW AND HYPOTHESES

Key model variables related to the personality of individuals working on IS projects were chosen based on important research proposing self esteem, general self-efficacy, locus of control, and neuroticism are factors indicative of one core construct (Judge, Erez, Bono, & Thoresen, 2002). For the purposes of this study, the higher order construct comprised of these four traits

will be called positive self-evaluation. As a component of this higher order construct, self-esteem represents “a judgment of self-worth or self-satisfaction” (Whyte, 1997 p. 417). It has also been defined specifically as the “overall value that one places on oneself as a person” (Judge, Erez, Bono, and Thoresen, 2003, p. 303). A closely related trait is self-efficacy and has been shown to be an important determinant in decision-making environments (Trevelyan, 2011). Generalized self-efficacy is defined as the “individual’s perceptions of their ability to perform across a variety of different situations” (Judge, Erez, and Bono, 1998 p. 170). Higher levels of self-efficacy additionally can impact goal commitment, which adds to an increased effort by the individual. In a study of entrepreneurs, self-efficacy was found to impact goal commitment (De Clercq, et al., 2009). Self-efficacy has also been linked to issues related to project escalation (Whyte, Saks, and Hook, 1997).

Locus of control conveys the overall view an individual has related to “causes of events in one’s life – locus is internal when individuals see events as being contingent on their own behavior” (Judge, et al., 2003, p. 304). An internal locus of control would indicate that individuals feel they are responsible for project deliverables.

The final component of the higher order construct positive self-evaluation, neuroticism, has been shown to negatively relate to such things as motivation to learn. “Neuroticism is the tendency to have a negative cognitive/explanatory style and to focus on negative aspects of the self” (Judge, et al., 2003 p. 303). In a recent study by Brown and O’Donnell (2011), neuroticism was negatively related to goal orientation.

It is proposed that individuals who are high in positive self-evaluation will be more likely to focus on the plans and actions for achieving project objectives. The frame of mind that typifies this focus on a plan of action is defined as an implementation mindset (Armor & Taylor, 2003). For example, those who believe they have a strong internal locus of control may be more inclined to focus on carrying out the plans and activities to achieve a goal or objective. Those who feel they can determine what happens in life based on their actions and believe they can reach and achieve the goals of their plans would also be more likely to focus on those plans and actions needed to bring goals to fruition. Additionally, it would stand to reason that individuals who believe they are capable or competent and can achieve difficult tasks are more likely to be focused on the course of action that is needed to achieve those tasks. It is expected that those who score high on the positive self-evaluation personality trait will also be more likely to focus on the plans and actions needed to accomplish a task or goal. It is therefore hypothesized that

H1: Positive self-evaluation will be positively related to implementation mindset.

Additionally, a positive self-evaluation is expected to be positively related to the individual's commitment to information systems’ project objectives. Prior studies have found positive relationships between personality traits and commitment, and self-efficacy has been explicitly identified as an antecedent to affective goal commitment (Whyte, Saks, & Hook, 1997; Latham, Erez, & Lock, 1998). Recently, Lau (2012) found both self-efficacy and locus of control to have a positive effect on goal commitment. It is expected that individuals with a high level of internal locus of control will have a higher level of perceived project commitment to the project objectives. Therefore, it is believed that the higher-order construct, positive self-evaluation, will also have a positive effect on commitment.

H2: Positive self-evaluation will be associated with higher levels of commitment to project objectives.

An implementation mindset is a situation-specific individual perception about how focused someone is on the plan of action to achieve a goal (Armor & Taylor, 2003). An implementation mindset includes beliefs about knowing what, when, and how activities will be carried out in order to complete a goal (Dholakia & Bagozzi, 2002). Therefore, in the context of an information systems project, the implementation mindset would reflect the degree to which individuals involved in the project are focused on carrying out the actions and tasks that are needed for the project to be completed. According to Gollwitzer (1999), the effect of mindsets is stronger when there is a longer gap between goal initiation and goal completion. In information systems development projects it is not uncommon for a significant amount of time to lapse between the project initiation and project completion. Therefore, it would appear that implementation mindsets might be particularly salient in these projects. Because of the nature of the mindset to be focused on actions to complete a goal, it is possible that the more an individual is focused on the tasks leading to goal completion that they become more committed to meeting the objectives of the goal. Implementation mindset is a key psychological state related to goal attainment as guided by goal theory. It is therefore hypothesized that

H3: Implementation mindset will be positively related to the individual's commitment to project objectives.

## RESEARCH METHODOLOGY AND RESULTS

A survey was administered online to individual project team members who were in the process of working on an information systems project. All survey items used were adapted from existing measures and are provided in Appendix Table 1. Items were evaluated on a 5 point Likert-type scale from 1=strongly disagree to 5=strongly agree. Data was evaluated according to the two-step approach (Anderson & Gerbing, 1988) in which a confirmatory factor analysis is performed first proceeded by an analysis of the research model assessing the significance of the proposed hypotheses and variance explained in the dependent variable. AMOS was used to perform the data analysis.

Two hundred and thirty-two responses (232) were received from individuals working on information systems projects. A response rate cannot be determined based on the process for encouraging participation in the study. Information systems managers from several large organizations encouraged but did not require participation by individuals currently involved in an information systems development project in their organizations. The total number of individuals working on projects in the participating organizations was not provided to the research team.

The first step in examining the proposed model was to confirm the existence of a second order construct as indicated by Judge et al. (2002). Analysis revealed that self-esteem, self-efficacy, and locus of control loaded as expected. Neuroticism, however, did not load with the other factors, with a factor loading of only .383. Specific analysis results can be found in the Appendix in Table 2.

Analysis of the structural model occurred after the measurement model was evaluated. Results indicate that positive self-evaluation significantly impacted project commitment. A direct impact was found as well as an indirect relationship via the construct's influence on

implementation mindset. Individuals with a high positive self-evaluation tended to be more committed to the project objectives. The variance explained in the model's dependent variable was 38%, revealing the significance of the traits and state examined. The final model is presented in the Appendix Figure 2.

## LIMITATIONS AND FUTURE RESEARCH

While the results of this study and examination of project commitment provided significant explanatory power, there were issues that need to be addressed in future research. As noted previously, according to Judge et al. (2002), there are four factors in the core multi-dimensional personality construct. These factors are self-esteem, general self-efficacy, locus of control, and neuroticism and were modeled here as positive self-evaluation. A limitation of this study was poor reliability of the neuroticism measure, which led to dropping neuroticism as a construct from the measurement model. Future research should examine this relationship using additional measures of the construct and conduct further confirmatory analysis on the multi-dimensionality of positive self-evaluation.

Additional research should be conducted to also confirm the positive self-evaluation construct. Results of this study indicate that self-esteem, self-efficacy, and locus of control represent a higher order construct important in determining project outcomes via its influence on commitment to project objectives. Data should also be collected from samples of multiple populations. While the sample used in this study was a decent size, the generalizability to other areas of information systems projects cannot be assumed. Some scales for neuroticism to consider using for future research include the NEO-FFI (Costa & McCrae, 1992) or the IPIP (Goldberg, 1996).

## CONCLUSION

The contributions of this study are two-fold. First, the four personality traits defined by Judge, et al. (2002) were confirmed to represent one higher order construct. While neuroticism had to be dropped due to the results of statistical analysis, support for the relationships between self-efficacy, self-esteem, and locus of control were provided. This examination is the first known in relation to information systems development projects. The finding helps garner understanding of both the impact of individual traits and how those traits work together to impact implementation mindset and commitment to the project objectives. Second, the results provided that the individuals' personality traits and the implementation mindset state have an impact on project goal commitment. Understanding commitment in the development environment provides for a higher likelihood for project success. For example, it has been shown that commitment can have a direct impact on project escalation (Lee, Keil, and Kasi, 2012). If a project manager can better focus the efforts of individuals based on their needs and courses of action, escalation and other negative outcomes might be avoided.

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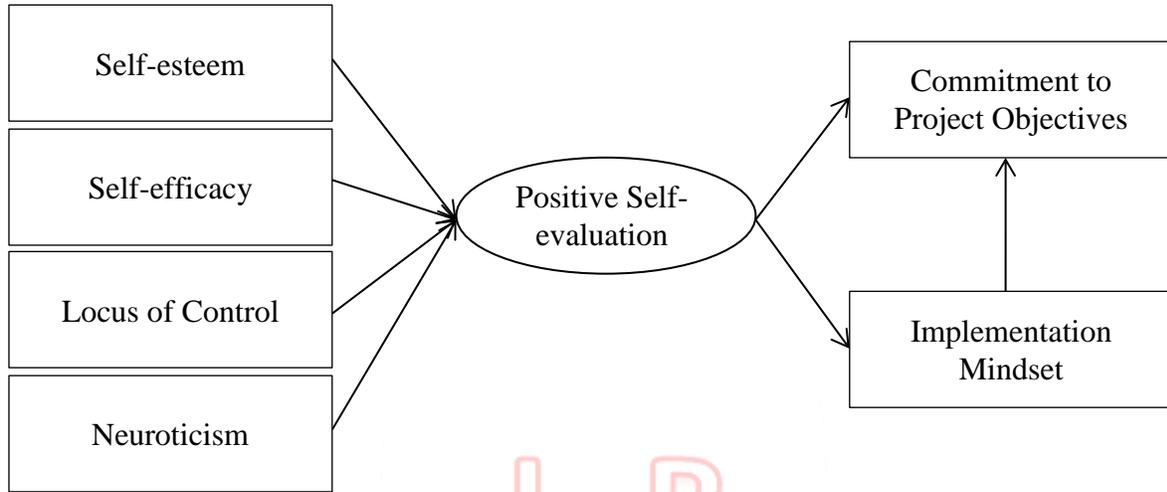
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S B

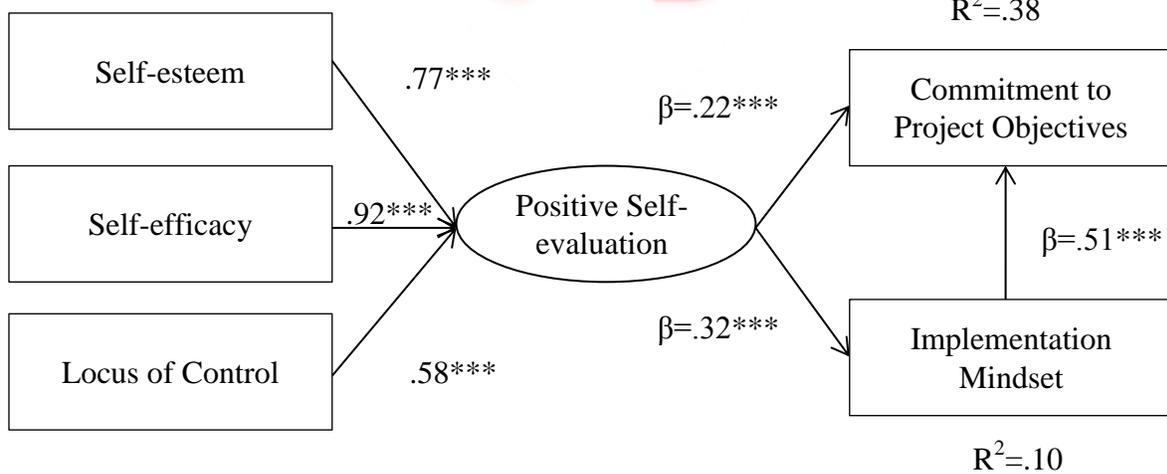
APPENDIX

Figure 1. Proposed Model



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Figure 2. Final Research Model



$p < .01^{**}$ ;  $p < .001^{***}$

**Table 1: Measurement items****Commitment to Project Objectives** (Klein, Wesson, Hollenbeck, Wright, and Deshon, 2001)

- [CPO1] I am committed to completing this project on time.  
 [CPO2] It is important to me that this project is completed according to schedule.  
 [CPO3] I am committed to completing this project within budget.  
 [CPO4] It is important to me that this project is finished within budget.  
 [CPO5] I am committed to finishing every deliverable for this project.  
 [CPO6] It is important to me that all the required functionality is completed for this project.  
 [CPO7] I am committed to the quality of this project.  
 [CPO8] The quality of this project's outcome is important to me.

**Implementation Mindset** (Dholakia and Bagozzi, 2002)

- [IM1] I am focused on what I need to do to complete this project.  
 [IM2] I have a good idea of how I will perform the tasks that I need to do for this project.  
 [IM3] I have a good idea of when I will perform the tasks that I need to do for this project.  
 [IM4] I have a good idea of how long it will take me to do the tasks that I need to do for this project.

**Positive Self Evaluation** (Judge et. al., 2002)

## Self-Esteem (Rosenberg, 1964)

- [SE1] I take a positive attitude toward myself.  
 [SE2] I feel that I have much to be proud of.  
 [SE3] I have a strong sense of self-respect.  
 [SE4] I am quite satisfied with who I am.

## General Self-Efficacy (Chen, Gully, and Eden, 2001)

- [GSE1] I will be able to achieve most of the goals that I have set for myself.  
 [GSE2] When facing difficult tasks, I am certain that I will accomplish them.  
 [GSE3] In general, I think that I can obtain outcomes that are important to me.  
 [GSE4] I believe I can succeed at most any endeavor to which I set my mind.  
 [GSE5] I will be able to successfully overcome many challenges.  
 [GSE6] I am confident that I can perform effectively on many different tasks.  
 [GSE7] Compared to other people, I can do most tasks very well.  
 [GSE8] Even when things are tough, I can perform quite well.

## Locus of Control - Internality (Levenson, 1981)

- [LOC1] When I get what I want, it is usually because I worked hard for it.  
 [LOC2] My life is determined by my own actions.  
 [LOC3] When I make plan, I am almost certain to make them work.  
 [LOC4] I determine what will happen in my life.

## Neuroticism (Gosling, Rentfrow, and Swann, 2003)\*

- [NR1] Anxious, easily upset.  
 [NR2] Calm, emotionally stable.

\*Due to low factor loading (< .50) and reliability Neuroticism was dropped from the second-order construct

**Table 2. Factor loadings, composite reliability, and average variance extracted**

Construct/Item	Factor Loading	Composite Reliability	Average Variance Extracted
Positive Self Evaluation (PSE)		.81	.59
Self-Esteem (SE)	.77		
General Self-Efficacy (GSE)	.92		
Locus of Control (LOC)	.58		
Neuroticism	.38		
Commitment to Project Objectives (CPO)		.95	.72
CPO1	.93		
CPO2	.89		
CPO3	.84		
CPO4	.80		
CPO5	.90		
CPO6	.87		
CPO7	.75		
CPO8	.78		
Implementation Mindset (IM)		.90	.69
IM1	.80		
IM2	.86		
IM3	.88		
IM4	.79		
Note: all factor loadings are significant at $p < .001$			

**Table 3. Model Fit**

Fit Measures	Chi-Square	RMSEA	RFI	CFI	Evaluation of Fit
Thresholds		<.10	>= .90	>= .90	
Model	$\chi^2=5.35$ p=.253	.038	.965	.996	Excellent