

## Team Characteristics and Effectiveness in Apparel Product Development

Lynn Eunjung Kwak

Assistant Professor

The School of Human Consumer Sciences

Ohio University

[kwak@ohio.edu](mailto:kwak@ohio.edu)

Deborah Crown, Ph.D.

Professor

Lucas Graduate School of Business

San José State University

[deborah.crown@sjsu.edu](mailto:deborah.crown@sjsu.edu)

Catherine Black, Ph.D.

Associate Professor

Department of Apparel, Merchandising,

Design and Textiles

Washington State University

[cblack@wsu.edu](mailto:cblack@wsu.edu)

### ABSTRACT

*The purpose of this study is to explore team characteristics that enhance APD team members' job satisfaction and team members' judgment of team effectiveness. U.S. apparel companies that each earned over \$50 million in annual sales were selected from the National Register of Apparel Manufacturers. APD team members ( $n = 131$ ) representing 34 teams participated in the mail survey. Results identified the major APD team characteristics. Self-management, participation, training, and managerial support are directly related to potency and indirectly related to team member's judgment of effectiveness. As the literature lacks an investigation of the APD teams, this study is the first test of the mediating effect of potency in order to explore the relationship among APD team characteristics. The increased knowledge and enhanced support on apparel product development (APD) teams offer companies a competitive advantage in the APD process as they face consumer demands and overcome challenges.*

M

*Keywords: apparel product development, team, potency*

---

### Introduction

Consistent with other industries, teams are a key component of apparel product development (APD), which is the design and engineering of apparel products that are serviceable, producible, marketable, and profitable (Glock and Kunz, 2004). Studies indicate that the APD process currently utilizes a team approach and is necessary for product development (Kincade *et al.*, 2007; Pitimaneeyakul *et al.*, 2004).

The APD process requires a series of decision-making steps, such as defining and articulating the problem, exploring possible solutions, and implementing a solution (Glock and Kunz, 2004). In their study, Kincade *et al.* (2007) confirmed that APD uses multi-disciplinary teams and involvement across company teams. According to Pitimaneeyakul *et al.* (2004), marketing personnel develop marketing plans, sales personnel collect concept ideas

and analyze the consumers' needs, and designers seek inspiration from various sources and participate in sketching the design specifications and in developing samples. Although there are various definitions of the word "team," for the purpose of this paper "team" will refer to a small group whose members have complementary skills, have a common purpose, apply performance goals, and who accept mutual accountability (Proehl, 1997, p.139).

Globalization presents continuing challenges for the apparel industry. Apparel firms are required to develop and manufacture a product line that is high-quality, diverse, and competitively-priced. They also must shorten the product-development life-cycle and effectively manage workers to meet these challenges (Dillard, Crane, & Hamilton, 2000). According to Divita *et al.* (2006), in order to do so, some apparel and textile company focus on strategic partnerships with other members of the supply chain. Certainly, effectively managing workers and providing appropriate organizational resources to meet these challenges are vital issues for the success of apparel companies. Both academic literature and current trends in the workplace indicate that the use of teams will continue to grow. More than 50 % of all Fortune 500 companies utilized teams in their management structure and 70% to 75% companies utilize teams in new product development (Barczak & Wilemon, 2001). Usually, productivity increases when workers see themselves as part of a team, rather than as individuals who work alone. Also, a team approach increases the sense of camaraderie, self-worth, and belonging (Stewart, Manz, & Sims, 1999).

Though researchers have examined the process aspects of APD (Kincade *et al.*, 2007; Pitimaneeyakul *et al.*, 2004), the literature lacks an investigation of the use of teams, team characteristics, and team effectiveness for decision making teams. The majority of the previous team research has focused on production system teams in the apparel industry (Crane *et al.*, 2003;

Dillard *et al.*, 2000). Conversely, this study focuses on APD teams, which rely on individuals who perform critical and analytical decision-making tasks rather than assembly tasks.

Previous team studies stated that potency, one of the team characteristics, is a prominent variable related to team effectiveness (Akgun *et al.*, 2007; Campion *et al.*, 1996). Potency refers to how well one can execute courses of action required to deal with a prospective situation (e.g., our team will be successful no matter what the task) (Gully *et al.*, 2002). The higher the potency in general, the more positive the outcomes. Therefore, it is critical to know whether team characteristics impact potency, and, if so, which characteristics influence potency the most. Based on these needs, the purpose of this study is to do the following.

1. Explore team characteristics that enhance an apparel product development team members' job satisfaction and team members' judgment of team effectiveness.
2. Examine whether potency mediates the influence of these team characteristics on team member's judgment of team effectiveness.
3. Examine whether potency mediates the influence of these team characteristics on a team member's job satisfaction.

### **Team characteristics and effectiveness model**

Researchers who study team characteristics frequently examine and reference "the input-process-output" (IPO) model (Hackman, 1987). Hackman's IPO model illustrates the nature of team performance in a classic structural model in which inputs lead to processes that in sequence lead to outcomes. In his model, the ability of team members to work together and the satisfaction of those team members contribute to outcome, team effectiveness. According to Ilgen *et al.* (2005), although the IPO framework has had a strong influence on team research, it is insufficient

for characterizing teams. They argued that many of the mediating factors intervene in the influence of inputs to outcomes. They suggested an alternative model, IMOI (input-mediator-output-input). Substituting “M” for “P” embraces diverse variables that are important meditational influences. Adding the “I” at the end of the model raises the idea of cyclical causal feedback. This study examines the mediating effect of potency between team characteristics and team effectiveness. This study aims to add empirical support to test the IMOI theoretical framework.

### **Team effectiveness**

Team effectiveness refers to the output production of the team, which not only should meet or exceed the performance standard but also should maintain or enhance the capability of team members to work together (Hackman, 1987). Previous studies have used subjective and objective measures to assess team effectiveness (Arnett *et al.*, 2005). Subjective measurements consist of the assessment of team members’ and leaders’ perceptions. Objective measurements assess team performance through the use of financial, production, or human resource data. The current study assesses team effectiveness using employee judgment of effectiveness. Because the participants were drawn from multiple companies, objective assessment of effectiveness was not possible due to lack of standard objective measurement across companies.

### **Job satisfaction**

Job satisfaction is an important outcome related to employees’ well-being and stress levels (Judge *et al.*, 2001). Researchers have investigated the relationship between job satisfaction and job characteristics (Choi and Gaskill, 2000; Presley, 1999). Job satisfaction is a key outcome if the team approach is to remain viable, and high job satisfaction leads to the capability of team members to work together effectively (Holland *et al.*, 2000). This current study defines job satisfaction as “a

positive (or negative) evaluative judgment one makes about one’s job or job situation” (Brief and Weiss, 2002, p. 283).

### **Team characteristics**

In Campion *et al.*’s (1996) study, the term “team characteristics” refers to teams’ distinguishing traits, qualities, or properties. This study follows the team characteristics that Campion *et al.* (1996) presented in their study. Team characteristics include communication; interdependence in task, goal, and feedback/rewards; managerial and social support; participation; potency; self management; training; and workload sharing.

#### *Communication within the team*

Choi and Gaskill (2000) have investigated the relationship between the characteristics of communication/cooperation and employee performance. Their research results imply that, compared to traditional retail buyers, apparel product developers are more reliant on relationships with team members and other employees within the organization. Based on interviews with apparel manufacturing team workers (managers, sales staff, marketing staff, and production employees), Loker’s (2002) case study concluded that communication between employees facilitates performance of discretionary tasks (i.e., creative and imaginative problem solving). Therefore, the following hypotheses were developed:

- H1a: The level of communication within a team is positively related to a team member’s satisfaction.
- H1b: The level of communication within a team is positively related to a team member’s judgment of effectiveness.

#### *Interdependence in task, goal, and feedback*

Interdependence refers to the level of team member interaction required by a work task in order for the team members to complete the task. Interdependence may increase workers’ motivation toward performing their tasks (Shea and Guzzo, 1987). According to Shea and Guzzo (1987), interdependence links individual workers to

a common mission to maximize team effectiveness. Wageman (1995) determined that a higher degree of task interdependence increases the degree of quality interaction and cooperation among team members. Thus, the following hypotheses were developed:

H2a: The level of interdependence in a task, goal, and feedback is positively related to a team member's satisfaction.

H2b: The level of interdependence in a task, goal, and feedback is positively related to a team member's judgment of effectiveness.

#### *Managerial and social support*

Managerial support means that higher management in the company supports the concept and the use of teams. Shea and Guzzo (1987) and Hackman (1987) indicated that groups must receive the necessary support from management if they are to succeed. A study of retail employees' social support and stress levels by Wolken and Good (1995) concluded that the social support system is beneficial in reducing employees' stress levels. Thus:

H3a: The level of managerial and social support is positively related to a team member's satisfaction.

H3b: The level of managerial and social support is positively related to a team member's judgment of effectiveness.

#### *Potency*

Potent teams have a lot of team spirit. Potency refers to the generalized beliefs about the capabilities of the team across tasks and contexts. Previous studies have shown that team potency is linked to team effectiveness (Campion *et al.*, 1996; Gully *et al.*, 2002). Campion *et al.*'s study (1996), within a financial services organization, found that potency was the team characteristic most closely related to team effectiveness. Thus:

H4a: The level of potency is positively related to a team member's satisfaction.

H4b: The level of potency is positively related to a team member's judgment of effectiveness.

#### *Participation*

Loker (2002) found that a higher degree of motivation on the part of employees is related to an increase in their participation. In the results of the Campion *et al.* (1996) study, within the job design theme (i.e., self-management, participation, task variety, task significance, and task identity), participation was the strongest predictor of team effectiveness. Thus:

H5a: The level of participation of a team member is positively related to that team member's satisfaction.

H5b: The level of participation of a team member is positively related to that team member's judgment of effectiveness.

#### *Self management*

Self-management refers to the degree of self-control that an individual exercises over his/her own tasks within the team. Researchers have used the degree of autonomy to evaluate the concept of self-management. Elmuti (1996) investigated the relationship between the degree of autonomy and the degree of organizational effectiveness within a self-managed team. The research results supported the author's hypothesis that self-managed teams are more effective. Several studies indicate that apparel industry employees prefer to work autonomously, which results in higher job satisfaction (Choi and Gaskill, 2000; Crane *et al.*, 2003; Loker, 2002). Based on the literature review, the following hypotheses were proposed:

H6a: The level of self management is positively related to a team member's satisfaction.

H6b: The level of self management is positively related to a team member's judgment of effectiveness.

#### *Training*

There are several types of effective team training (Salas *et al.*, 2007). For example, cross-training enhances a team member's ability to perform the tasks of other team members. In team coordination and adaptation training, team members are trained to best use downtime and to communicate effectively. When retail companies introduce in-house product development, their employees, who have expanded their roles from traditional retail buyers to product developers, require additional training (Choi and Gaskill, 2000). Based on the literature review, the following hypotheses were developed:

- H7a: The level of training is positively related to a team member's satisfaction.
- H7b: The level of training is positively related to a team member's judgment of effectiveness.

#### *Workload sharing*

Workload sharing means that everyone on a team does his/her fair share of the work, that no one in team depends on other team members to do the work for him/her, and that nearly all of the team members contribute equally to the work. Team members are willing to equally share the workload, which prevents social loafing or free-riding. Most research has been conducted in laboratory settings, but it is assumed that workload sharing is related to greater productivity (Campion *et al.*, 1996). Thus:

- H8a: The level of workload sharing is positively related to a team member's satisfaction.
- H8b: The level of workload sharing is positively related to a team member's judgment of effectiveness.

#### *Potency as a mediator*

Recent studies investigated the mediating role of potency on team effectiveness (Akgun *et al.*, 2007; De Jong *et al.*, 2005; Sivasubramaniam *et al.*, 2002). Lester *et al.* (2002) investigated antecedents and consequences of group potency among newly-formed work groups. They found that

potency mediates the relationships between leadership and communication, and group effort and performance. Based on the review of literature and the theoretical background, the following can be hypothesized:

- H9a: Potency mediates the influence of team characteristics on a team member's judgment of effectiveness.
- H9b: Potency mediates the influence of team characteristics on a team member's job satisfaction.

## **Method**

### *Survey procedures*

Six hundred and ninety-three U.S. apparel companies that each earned over \$50 million in annual sales were selected from the *National Register of Apparel Manufacturers, Women and Children's Wear*. These companies had a large number of employees, and it was assumed that they would have more than one APD team. This study followed the mail survey methods of Dillman (2000). A contact letter was sent to these 693 U.S. apparel companies. The contact persons included CEOs, APD managers, and executives who made final decision about their company's participation in this study. In order to maintain validity, researchers indicated that "a team is a group of people work together to develop products for your company" and "apparel product development (APD) is the design and engineering of apparel products" on the initial contact letter. The letter requested information regarding: 1) whether or not their companies had APD teams, 2) the company's number of APD teams, and 3) the number of members in each team.

Seventy-three (73) of the 91 responding companies indicated that they had one or more APD teams. A questionnaire packet was sent to the contact people at the 73 companies. If the company had multiple APD teams, the company received multiple packets, equal to the number of APD teams. Each team manager or contact person distributed the team member questionnaires to each of his/her APD team members. Team members sent

the completed questionnaires directly to the researcher. Individual team members completed a questionnaire to determine how they perceived their APD team characteristics and team effectiveness.

#### *Demographic characteristics of companies, teams, and participants*

Of the 73 companies indicating they had APD team(s), 22 companies voluntarily participated in this study. Four hundred and forty-seven (447) team member surveys were sent out to the 22 companies and a total of 131 individual team members representing 34 teams responded. The response rate was 29.3%. The majority (59.1%) of the 22 participating companies produced approximately \$50 million in annual sales. The remaining companies produced more than \$75 million in annual sales. Over half of the companies had only one APD team, while 27.2% of the companies had two or three APD teams. The remaining companies had more than three teams. Among the 22 participating companies, the majority of companies (81.8%) had teams that averaged four to eight team members. The median number of team members was six.

This study measured demographic characteristics of individual team members. A high percentage of team member respondents were females (77.9%) and most frequent age range was between 26 and 35 years of age (38.9%), followed by 36 and 45 years (32.8%). More than half of the team members had undergraduate degrees (58.5%) or an associate degree (19.5%). In terms of job title, 29% of the team members were designers. Production, merchandising, and sales/marketing personnel respectively represented the remaining job titles in descending order.

#### *Survey instruments*

In this study the Campion *et al.*'s (1996) questionnaire was used, but some items were reversed to prevent identity rater bias. To determine a total value for each characteristic, the responses were summed. For team members' judgment of effectiveness, participants rated statements such as "My team provides innovative products or services" and "My team consistently completes work on time." Cronbach alpha coefficients for team characteristics and effectiveness were ranged .50 to .73. To assess team members' job satisfaction, the current study used survey instruments developed by Gladstein (1984). The coefficient alpha value for team members' satisfaction in this study was .89 (see Table I and Appendix 1).

## **Results**

### *Phase 1. Team characteristic identification*

To test Hypotheses H1a through H8b, correlation analysis was used (see Table I). Potency, workload sharing, communication, and social support within teams were highly correlated (in descending order) with team member's job satisfaction and team member's judgment of effectiveness. Based on the results, Hypotheses H1a through H8b, were supported.

**Table I.**  
Variable reliabilities, means, standard deviations, and correlations

	Current study	Campion <i>et al.</i> (1996)	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
Potency	.69	.83	3.78	0.59	1.00												
Social support	.55	.87	3.74	0.54	0.50	1.00											
Workload sharing	.69	.92	3.55	0.79	0.61	0.41	1.00										
Communication within team	.64	.87	3.97	0.58	0.62	0.60	0.51	1.00									
Self-management	.50	.84	3.28	0.67	0.38	0.22	0.31	0.29	1.00								
Participation	.73	.89	3.57	0.70	0.53	0.38	0.43	0.47	0.45	1.00							
Training	.65	.81	3.24	0.70	0.35	0.40	0.29	0.35	0.31	0.31	1.00						
Managerial support	.59	.90	3.87	0.69	.047	0.46	0.44	0.51	0.24	0.37	0.33	1.00					
Task interdependence	.52	.70	3.83	0.58	0.22	0.34	0.17	0.30	0.13	0.10	-0.02	0.19	1.00				
Goal interdependence	.61	.70	3.40	0.74	0.24	0.19	0.23	0.26	0.16	0.09	0.20	0.31	0.35	1.00			
Feedback	.53	.71	3.19	0.72	0.40	0.29	0.31	0.39	0.23	0.22	0.21	0.46	0.32	0.59	1.00		
Team members' job Satisfaction	.89	.95 <sup>a</sup>	3.65	0.45	0.71	0.57	0.65	0.64	0.34	0.53	0.32	0.43	0.18	0.20	0.30	1.00	
Team members' judgment of effectiveness	.612	.94	3.83	0.37	0.72	0.33	0.55	0.52	0.25	0.24	0.19	0.37	0.21	0.34	0.37	0.60	1.00

Note.  $r$  = Cronbach's alpha,  $M$  = means,  $SD$  = standard deviation ( $n = 131$ ). Correlations greater than .16 in absolute value are significant at  $p < .05$ . a: Team members' job satisfaction was based on Gladstein's (1984) measurement.

*Phase 2. Testing potency as a mediator*

To test H9a and H9b, first, a factor analysis was conducted among team characteristics. Table II shows that as a result of a principal component factor analysis with varimax rotation, two factors merged. The characteristics that had large loadings were grouped together (greater than .50 in absolute value). Factor loadings

ranged from .54 to .76. Campion et al. (1996) and Gladstein (1984) concluded that potency, social support, workload sharing, and communication within team characteristics belong to process. Thus, because of the conceptual distinction the first factor was divided into two factors in this study. Therefore, this study generated three factors. Factor labels and Cronbach alpha coefficients are presented in Table II. Regression analysis (Table III) confirmed that job design and resources plus interdependency factors predict potency. In this analysis, process was not included because potency belongs to the process factor.

**Table II.**

Factor loadings for team characteristics

Team characteristics	Factor loading		Cronbach alpha coefficients
Factor 1: Process			.819
Potency	<b>.76</b>	.27	
Social support	<b>.54</b>	.45	
Workload sharing	<b>.68</b>	.13	
Communication within the team	<b>.70</b>	.38	
Factor 2: Job design and resources			.663
Self-management	<b>.55</b>	.01	
Participation	<b>.76</b>	.05	
Training	<b>.65</b>	.04	
Managerial support	<b>.61</b>	.42	
Factor 3: Interdependence			.724
Task interdependence	.06	<b>.75</b>	
Goal interdependence	.08	<b>.81</b>	
Independent feedback	.24	<b>.77</b>	
Eigenvalues	4.60	1.32	
% of variance	41.00	11.20	

Note. Boldface indicates higher factor loadings.

**Table III.**

Regression analysis of the influence of team characteristics on potency

Team characteristics	$b$	$t$	$p$
Job design and resources	.16	6.98	.000
Interdependency	.07	2.67	.008
$R^2$	.393	$F_{2, 120} = 38.84, p < .05$	
Adjusted $R^2$	.383		



To test H9a, a series of regression analyses were used. In the first step, job design and resources plus interdependence were found to have positive effects on potency. The second step of analysis concerned the perception of team members' judgment of effectiveness using multiple regression analysis. In the second step, when potency was not included in the model, job design and resources significantly predicted team member's judgment of effectiveness. In step 3, potency was added to the model. Potency was positively related to team member's judgment of effectiveness. Job design and resources were no longer significantly related to team member's

judgment of effectiveness. Since interdependence remained significant in this step, it was not included in the mediating effect of process (Table IV). Therefore there is a mediating effect only between job design and resources and team member's judgment of effectiveness. In the same manner of statistical analysis, the result of testing H9b is presented in Table V. Thus, it is concluded that potency does not mediate independent variables and team members' satisfaction. Based on the results, the framework (Figure 1) is suggested, which illustrates that potency mediates the influence of job design and resources on team member's judgment of effectiveness.

**Table IV.**

H9a. Testing potency as a mediator on team member's judgment of effectiveness

Predictor variables	Potency	Team members' judgment of effectiveness	
	Step 1	Step 2	Step 3
Job design and resources	0.16***	0.14**	-0.07
Interdependency	0.07**	0.19***	0.10*
Potency	---	---	1.32***
R <sup>2</sup>	0.39	0.22	0.55

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ; --- not applicable

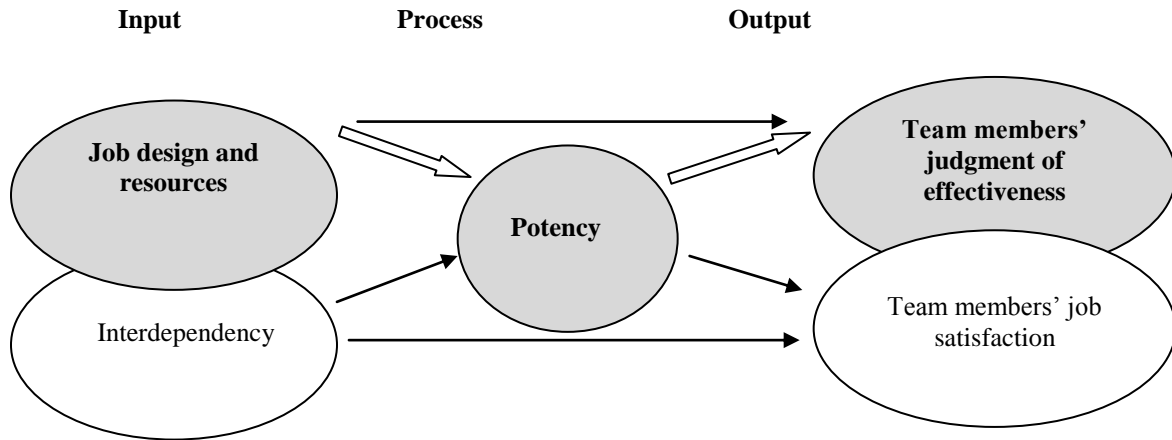
**Table V.**

H9b. Testing potency as a mediator on team member's job satisfaction

Predictor variables	Potency	Team members' job satisfaction	
	Step 1 <i>B</i>	Step 2 <i>B</i>	Step 3 <i>B</i>
Job design and resources	0.16***	0.22***	0.97**
Interdependency	0.07**	---	---
Potency	---	---	0.79***
R <sup>2</sup>	0.39	0.27	0.49

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ; --- not applicable

**Figure 1.**  
The mediation effect of potency



Hollow arrows and bold letters indicate mediating effect of potency on job design and resources as well as on team members' judgment of effectiveness.

### Discussion

Although previous literature within the apparel industry indicates that apparel product development (APD) employs a team approach, there has been a lack of investigation about team dynamics in APD. This study confirmed that APD utilizes teams, but also identified key team characteristics that influence APD team effectiveness. The present study is the first test of the mediating effect of potency to explore the relationship among APD team characteristics. According to the present study results, potency displayed the highest degree of correlation with team member's job satisfaction and team member's judgment of effectiveness. This confirms the results of the previous study that found potency is a prominent team characteristic (Akgun *et al.*, 2007; De Jong *et al.*, 2005; Lester *et al.*, 2002; Sivasubramaniam *et al.*, 2002)

In this study, communication/cooperation within the team, workload sharing, and social support, in descending order, displayed the next highest degree of correlation with team member's job satisfaction and team member's judgment of effectiveness. The results of this study

suggest that when all APD team members are willing to equally share the workload, APD teams are more effective and team members are more satisfied with their jobs. These results imply that educators in APD need to instruct their students to learn broad aspects of APD and the skills required working effectively together. Social support is also positively related to team effectiveness and team member satisfaction. This is consistent with previous study findings (Wolken and Good, 1995).

The present study found that a high level of managerial support for the concept of teams was positively related to dependent variables. Further, the study found that team manager support is more important than the training that team members receive from their companies and that APD team members do not consider training as important to team effectiveness and job satisfaction as other team characteristics. The present results indicated that the combination of education and job experience may contribute to team members' confidence in performing their jobs. Bunderson and Scutcliffe (2003) concluded that overemphasizing training may consume company resources and divert

attention away from existing company goals. Therefore, APD team managers need to consider how much emphasis to place on training. The low correlation between team training and team effectiveness may be also explained by the low level of “team training” offered by companies. Although companies may provide training at the individual level, they may not provide training at the team level. The results of previous studies indicated that employees express high job satisfaction when they work autonomously. Although the current research results are consistent with previous findings (Choi and Gaskill, 2000; Crane *et al.*, 2003; Loker 2002), the self-management and participation of team members are not as important as other team characteristics such as potency, communication, and work load sharing.

To examine the mediating effect of potency, this study identified three factors (process, job design and resources, and interdependency) from team characteristics that significantly influence potency. According to the results, potency mediates the relationship between job design and resources, and team member’s judgment of effectiveness. Therefore, based on this study results, self-management, participation, training, and managerial support, which belong to the job design and resources factor, are directly related to potency and indirectly related to team member’s judgment of effectiveness. APD team managers need to encourage potency through modeling and telling team members that their team possesses the capabilities to confidently accomplish their tasks. They also need to encourage team members’ self management, participation, and training to increase potency, which will ultimately enhance team effectiveness.

### **Limitations and future studies**

These empirical findings support the propositions of this study; however, a few potential limitations need to be considered. First, compared to the reliabilities of the original measurements that were found by Campion *e al.* (1996), the current study had

slightly lower reliabilities for some of the individual team characteristics (e.g., self-management and task interdependence). For the purpose of this study, the high reliabilities, as a set, assured the assessment of the results collectively. Next, the participating companies were drawn from a diverse apparel industry and they utilize their own objective measurement of APD team effectiveness. Therefore, there is no standard measurement across companies that allows this study to assess APD team effectiveness. However, future studies may choose one or two companies and should utilize objective measurements to be able to generalize these results further. A third potential limitation to the present findings is that this study conducted a cross-sectional survey in order to assess perceptions of individuals. Future studies may wish to use multiple methods of data collection in order to avoid common method variance. Further research should try to stratify companies on size, sales, and other variables that may influence the study results.

Despite these limitations, the results of this study have both practical and theoretical implications. This study identified major team characteristics, including potency, which was the most important characteristic and exerted the greatest influence on APD team effectiveness measurements. The results of the study enable the apparel firms and apparel managers to provide superior support to their APD teams. The model of this study is applicable to teams in other fields including the textile industry that focuses on product development and utilizes similar teams of the current study. From a theoretical standpoint, this study identified APD team characteristics and examined the relationships between these characteristics (input) and team effectiveness (output) with potency as a mediator.

## References

- Akgun, A., Keskin, H., Byrne, J. and Imamoglu, S. (2007). Antecedents and consequences of team potency in software development projects. *Information and Management*, 44(7), 646-656.
- Arnett, D., Macy, B. and Wilcox, J. (2005). The role of core selling teams in supplier-buyer relationships. *Journal of Personal Selling and Sales Management*, 25(1), 27-42.
- Brief, A. and Weiss, H. (2002). Organizational behavior: Affect in the workplace. *Annual Review of Psychology*, 53, 279-307.
- Bunderson, J. and Scutcliffe, K. (2003). Management team learning orientation and business unit performance. *Journal of Applied Psychology*, 88(3), 552-560.
- Campion, M., Papper, E. and Medsker, G. (1996). Relations between work team characteristics and effectiveness: A replication and extension. *Personnel Psychology*, 49, 429-452.
- Choi, Y. and Gaskill, L. (2000). An analysis of mental processes, behaviors, and job satisfaction of apparel product developers and traditional retail buyers. *Journal of Business Research*, 49, 15-34.
- Crane, T., Dillard, B. and Hamilton, J., (2003). Empowered teams effecting positive corporate culture change. *Journal of Fashion Marketing and Management*, 7(2), 182-195.
- De Jong, A., De Ruyter, K. and Wetzel, M. (2005). Antecedents and consequences of group potency: A study of self-managing service teams. *Management Science*, 51(11), 1610-1625.
- Dillard, B., Crane, T. and Hamilton, J. (2000). Team-based sewn products manufacturing: A case study. *International Journal of Clothing Science and Technology* 12(4), 279-292.
- Dillman, D. (2000). *Mail and Internet Surveys: The Tailored Design Method*, 2nd ed., John Wiley & Sons, Inc., New York, NY.
- Divita, L., Ludwig, D. and Cassill, N. (2006). An examination of the economic and social benefits from US textile industry strategic partnerships. *Journal of Textile and Apparel, Technology and Management*, 5(3). Retrieved July 21, 2010 from [http://www.tx.ncsu.edu/jtatm/volume5issue3/articles/Divita/Divita\\_Full\\_196\\_06.pdf](http://www.tx.ncsu.edu/jtatm/volume5issue3/articles/Divita/Divita_Full_196_06.pdf)
- Elmuti, D. (1996). The perceived impact of team-based management systems on organizational effectiveness. *International Journal of Manpower*, 17(8), 4-17.
- Gladstein, D. (1984). Groups in context: A model of task group effectiveness. *Administrative Science Quarterly*, 29, 499-517.
- Glock, R. and Kunz, G. (2004). *Apparel Manufacturing*, 4<sup>th</sup> ed., Prentice Hall, Englewood Cliffs, NJ.
- Gully, S., Incalcaterra, K., Joshi, A. and Beaubien, M. (2002). A meta-analysis of team-efficacy, potency, and performance. *Journal of Applied Psychology*, 87(5), 819-832.
- Hackman, R. (1987). The design of work teams. In Lorsch, J. W. (Ed.), *Handbook of organizational behavior*, Prentice Hall, Englewood Cliffs, NJ. p. 315-342.
- Holland, S., Gaston, K. and Gomes, J. (2000). Critical success factors for cross-functional teamwork in new product development. *International Journal of Management Reviews*, 2(3), 231-259.
- Ilgen, D., Hollenbeck, J. and Johnson, M. (2005). Teams in organizations: From input-process-output models to IMOI models. *Annual Review of Psychology*, 56, 517-543.

- Judge, T., Thoresen, C., Bono, J. and Patton, G. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, 127, 376-407.
- Kincade, D., Ragan, C. and Gibson, F. (2007). Concurrent engineering for product development in mass customization for the apparel industry. *International Journal of Operations and Production Management*, 27(6), 627-649.
- Lester, S., Meglino, B. and Korsgaard, M. (2002). The antecedents and consequences of group potency: A longitudinal investigation of newly formed work groups", *Academy of Management Journal*, 45(2), 352-368.
- Loker, S. (2002). People and technology management in flexible manufacturing: An apparel industry case study. *Clothing and Textiles Research Journal*, 20(1), 26-32.
- Pinto, D. (2004). *The National Register of Apparel Manufacturers: Women and Children's Wear*, Marche Publishing, Los Angeles, CA.
- Pitimaneeyakul, U., LaBat, K., and DeLong, M. (2004). Knitwear product development process. *Clothing and Textiles Research Journal*, 22, 113-121.
- Presley, A. (1999). Maquiladoras: An unknown workforce. *Clothing and Textiles Research Journal*, 17(2), 94-104.
- Proehl, R. (1997). Enhancing the effectiveness of cross-functional teams. *Leadership and Organizational Development Journal*, 17(5), 3-11.
- Salas, E., Nichols, D., and Driskell, J. (2007). Testing three team training strategies in intact teams. *Small Group Research*, 38(4), 471-488.
- Shea, G. and Guzzo, R. (1987). Groups as human resources. In Rowland, K.M. and Ferris, G.R. (Eds.), *Research in Personnel and Human Resources Management*, Vol. 5, JAI Press, Greenwich, CT. p. 323-356.
- Sivasubramaniam, N., Murray, W., Avolio, B., and Jung, D. (2002). A longitudinal model of the effects of team leadership and group potency on group performance. *Group and Organization Management*, 27, 66-96.
- Wageman, R. (1995). Interdependence and group effectiveness", *Administrative Science Quarterly*, 40, 145-180.
- Wolken, W. and Good, L. (1995). The retail environment: Relationship of tension and social support. *Clothing and Textiles Research Journal*, 13(4), 280-288.

### **Appendix 1. Measurements**

(Strongly agree = 5, Agree = 4, Neither agree nor disagree = 3, Disagree Strongly = 2, disagree = 1)

#### **Team Characteristics**

##### *Communication/Cooperation*

###### *Within the Work Group*

- Members of my team hesitate to share information with other team members about our work. (reverse scored)
- Teams enhance the communication among people working on the same product.
- Members of my team cooperate to get the work done.

##### *Goal Interdependence*

- My work goals come directly from the goals of my team.
- My work activities on any given day are determined by my team's goals for that day.
- I do very few activities on my job that are not related to the goals of my team.

##### *Interdependent Feedback*

- Feedback about how well I am doing my job comes primarily from information about how well the entire team is doing.
- My performance evaluation is strongly influenced by how well my team performs.
- My rewards from my job (e.g., pay, promotion, etc.) are determined in large part by my contributions as a team member.

##### *Managerial Support*

- Higher management in the company supports the concept of teams.
- My manager supports the concept of teams.

##### *Participation*

- As a member of a team, I have a real say in how the team carries out its work.
- Most members of my team get a chance to participate in decision making.
- My team is designed to let everyone participate in decision making.

##### *Potency (Spirit)*

- Members of my team have great confidence that the team can perform effectively.
- My team can take on nearly any task and complete it.
- My team has a lot of team spirit.

##### *Self-Management*

- The members of my team are responsible for determining the methods, procedures, and schedules with which the work gets done.
- My team (rather than my manager) decides who does what tasks within the team.
- Most work-related decisions are made by the members of my team (rather than by my manager).

##### *Social Support*

- Being in my team gives me the opportunity to work in a team and provide support to other team members.
- My team increases my opportunities for positive social interaction.
- Members of my team help each other out at work when needed.

##### *Task Interdependence*

- I cannot accomplish my tasks without information or

materials from other members of my team.

- Other members of my team depend on me for information or materials needed to perform their tasks.
- Within my team, jobs performed by team members are related to one another.

#### *Training*

- The company provides adequate technical training for my team.
- The company provides adequate quality and customer service training for my team.
- The company provides adequate team skills training for my team (e.g., communication, organization, interpersonal, etc.).

#### *Workload Sharing*

- Everyone on my team does his/her fair share of the work.
- No one in my team depends on other team members to do the work for him/her.
- Nearly all the members on my team contribute equally to the work.

#### **Team Members' Job Satisfaction**

- I am satisfied with my present colleagues on my team.
- I am pleased with the way my colleagues and I work together.
- I am very satisfied with working in this team.
- Generally speaking, I am very satisfied with this job.
- I am generally satisfied with the kind of work I do in this job.
- I frequently think of quitting this job. (reverse scored)

#### **Team Members' Judgment of Effectiveness**

- My team consistently completes quality work.
- My team provides effective customer service.
- My team achieves the required productivity.
- My team sometimes completes work late. (reverse scored)
- My team completes work within budget.
- My team seldom provides innovative products or services. (reverse scored)
- My team responds quickly to problems and opportunities.
- My team members express job satisfaction.
- My team meets overall performance expectation.
- My team demonstrates initiative.
- My team members seldom cooperate with non-team members. (reverse scored)

#### **Appendix 2. Interdependency among team members**

Since each individual team member belongs to a team (company), responses from team members within the same team may be interdependent. This study examined whether team and company structure affects team members by using regression analysis. This study used dummy-variable coding for team membership. The regression analysis included 34 dummy-coded variables and two themes (36 independent variables). Two themes were derived from team characteristics. Table 1 displays the results of the regression analysis between the 36 independent variables the team members' judgment of effectiveness (dependent variable). Table 2 presents the results of the regression analysis between the 36 independent variables and team members' job satisfaction (dependent variable). The results indicate that the significance level of team interaction ( $p \leq .05$ ) and

interdependence ( $p \leq .05$ ) is the same as the significance level of the regression analysis using only two independent variables (team interaction and interdependence) and dependent variables. The overall

significance also remains the same ( $p \leq .05$ ). The result indicates that team membership's influence on the relationship between the team characteristics and the dependent variables is not significant.

Table 1. Regression analysis of the influence of team characteristics (two themes) on team members' judgment of effectiveness with team membership

Team characteristics	b	t	p
Team Interaction (process, job design and resources)	1.92	5.76	.00
Interdependence	.96	2.73	.00
constant	41.26	39.62	
$R^2$	.79	$F_{35, 95} = 4.62, p \leq .05$	
Adjusted $R^2$	.49		

Table 2. Regression analysis of the influence of team characteristics (two themes) on team members' job satisfaction with team membership

Team characteristics	b	t	p
Team Interaction (process, job design and resources)	1.89	10.25	.00
Interdependence	.63	3.25	.00
constant	20.44	35.62	
$R^2$	.85	$F_{35, 95} = 27.70, p \leq .05$	
Adjusted $R^2$	.61		