

UNIVERSITI TEKNOLOGI MARA

**FACTORS INFLUENCING GROUP
BRAINSTORMING PERFORMANCE IN
INDUSTRIAL DESIGN PRACTICES**

AMER SHAKIR ZAINOL

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for the degree of
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DECLARATATION

I hereby declare that the work in this dissertation is my own except for quotations and summaries which have been duly acknowledged. In the event that my thesis be found to violate the conditions mentioned above, I voluntary waive the right of conferment of my degree and agree be subjected to the disciplinary rules and regulations of Universiti Teknologi MARA.

Name of Candidate: AMER SHAKIR ZAINOL
Candidate's ID NO.: 2006138341
Programme: Doctor of Philosophy (Art & Design)

Signature of Candidate:
Date: July 2010

ABSTRACT

Generally, brainstorming is the most popular technique employed by organizations and institutions to generate creative ideas. Without exception, in industrial design practices, particularly in Malaysia, group brainstorming is also a tool that is much preferred by designers to elicit creative ideas. However, most empirical studies focus more on individual creativity rather than group creativity even though in industrial design practices it admits that group creativity, which is brainstorming, is very important. Based on past studies, this study identifies factors influencing brainstorming especially in industrial design practices. This study also attempts to enrich previous model of Input (personality traits) – Process (production loss and Satisfaction) – Output (group brainstorming performance) and brainstorming models to include Ownership of the Topic factor. This study examines four main factors, personality traits, production loss, Satisfaction, and Ownership of the Topic, all of which influence performance in group brainstorming. Personality traits in this study are based on *A Big Five*. Production loss is referred to as the factors that act to impair group performance. Production loss includes activities such as Production Blocking, Social Loafing, and Evaluation Apprehension. Satisfaction reflects how group members feel satisfied when they are in the brainstorming group, while Ownership of the Topic relates to the interest of individual in engaging the brainstorming activities in industrial design issue. Group performance is measured based on the Quantity of Ideas produced by the Industrial Design undergraduates during brainstorming sessions. 115 groups which consist of 460 Industrial Design undergraduates across 6 public universities have participated in this correlational study. The topic of the current problem in industrial design is given by a Malaysian prominent

industrial designer. Based on group-level of analysis, the hypotheses are tested using analysis of *Partial Least Squares* (PLS) regression. Results revealed that there is no direct effect between personality traits to Quantity of Ideas. Nevertheless, hypotheses of the direct effect of personality traits to the production loss are mostly supported. In accordance with the expectations, personality traits of Extraversion and Emotional Stability are positively significant related to Satisfaction even though personality of Openness is not positively significant to Satisfaction. In this study, only Production Blocking is negatively related to Quantity of Ideas while Social Loafing and Evaluation Apprehension are not. Contrary to expectation, Satisfaction is also not significant to Quantity of Ideas as hypothesized. Nevertheless, Ownership of the Topic has positive significance to Quantity of Ideas as expected. Results also demonstrate that only Production Blocking mediates the relationships between personality traits of Extraversion and Emotional Stability and Quantity of Ideas. In other words, groups that are high on these two personality traits would reduce competition of speaking time during brainstorming session. Hence, they produce more ideas especially in industrial design practices. Ownership of the Topic was examined as moderator between Satisfaction and Quantity of Ideas but was found not to have significant effect in the relationship. The results highlight the importance of personality traits and Ownership of the Topic that influence group brainstorming performance and the unique contributions of personality traits of Extraversion and Emotional Stability to reduce the problem of Production Blocking in group brainstorming. The implication for curriculum and recruiting Undergraduates and industrial designers are well based on personality traits, are also discussed.

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