



The dynamics of expert and team intuition in NPD projects: The role of environmental turbulence and expert power



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ABSTRACT

This paper empirically examines the roles that an *expert intuition*, an *expert power*, and a *team intuition* play when applied to a particular task in the NPD team context. The objectives are achieved in two phases. In the first phase, the antecedents of *expert intuition* and *team likeliness to accept expert intuition* were tested. The moderating role that *environmental turbulence* plays was also measured. In the second phase, we measured the impact that an *expert intuition* and *team likeliness to accept expert intuition* had on an NPD *team intuition*. The moderating role that an *expert power* plays was also measured. A comprehensive literature review was conducted to develop the hypothesis and conceptual framework. Data was collected from 325 respondents of 116 software houses in Pakistan. Structured equation modeling (SEM) was used for data analysis. The findings revealed that *task uncertainty* had a positive and significant impact on *expert intuition* and *team likeliness to accept expert intuition*. *Environmental turbulence* also played a significant moderating role except in the case of *task creativity* and the *team likeliness to accept expert intuition*. There was also a positive impact from *expert intuition* and *team likeliness to accept expert intuition* on *team intuition*. The moderating role of *expert power* was also significant. This study adds value to the existing literature on *expert intuition*, *team intuition* and *expert power* especially in the NPD context. The relationship between intuition at the individual and team levels is established and the results revealed the impact of task uncertainty and expert power on the relationship.

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1. Introduction

Human beings are social entities who need to interact with other people in their societies (Rook, 1984). This concept can be traced as far back as Aristotle, and was then reinforced by Charles Darwin. Today it is still an accepted phenomenon in modern sociology, psychology and ethnography (Batson, 1990). When this human social entity interacts with a specific society, he or she is influenced by various environmental factors (Kollmuss & Agyeman, 2002). These include various political, social, cultural, technological and economic factors that influence the individual's perceptions, attitudes, and behavior, all of which affect the way that person reacts to a situation (Hansen & Wernerfelt, 1989).

The notion of an environment's influence on an individual's perceptions, attitudes, behavior and decision making is also found in the team setting (Sebanz, Bekkering, & Knoblich, 2006; Zarraga & Bonache, 2003). Like, in new product development (NPD) team context, the team's goals, processes and decision making are influenced by various environmental factors (Ozer, 2005). NPD team members usually operate in a turbulent environment (Dayan & Elbanna, 2011). A turbulent environment is

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characterized by intense competition, technological and environmental uncertainty and rapid changes in an organization's external environment (Dess & Beard, 1984). Since this kind of turbulent environment requires the NPD team to be more responsive to market needs, the team has to make decisions rapidly (Cooke, Salas, Kiekel, & Bell, 2004).

Most NPD teams are cross-functional in nature to effectively tackle such turbulent environment (Zirger & Hartley, 1996). Each cross-functional team member is an expert in his or her particular domain (Uhl-Bien & Graen, 1998). Eppinger and Ulrich (1995) defined a cross-functional NPD team as a group of experts from various functional areas who are brought together to achieve a common new product development goal. These experts apply individual cognition when working in a team setting, and also collectively share a common team cognition (West, 2007).

One of the key characteristics of experts' cognition is the ability to intuit based on their extensive knowledge and experience in uncertain conditions (Seifert & Hadida, 2009). Intuition is generally characterized as a rapid, unconscious, affective and holistic cognitive phenomenon that is automatic in nature (Dane & Pratt, 2007; Khatri & Ng, 2000; Sadler-Smith & Shefy, 2004). In this study, we are focused on expert intuition that is specific to a particular task or situation in which the expert has considerable experience (Crossan, Lane, & White, 1999).

Neisser (1976) defined expert intuition as a pattern recognition process based on past experiences. An expert can perceive sophisticated and complex patterns that a novice cannot. He or she no longer needs to think consciously about the actions regarding his or her area of expertise. In fact, sometimes it is difficult for experts to explain how they arrived at a decision to take a particular action since it is deeply rooted in their unconscious based on vast experience (Crossan et al., 1999). Prietula and Simon (1989) suggested that it normally takes 10 years of experience and 50,000 chunks of knowledge to be an expert in a particular field. Expert intuition is mostly useful in turbulent conditions where a rapid decision is required for a particular and uncertain task (Dane & Pratt, 2007). Such a scenario is not unique to the NPD context as NPD team experts may need to intuit for a particular and uncertain task that falls in the domain of their expertise (Seifert & Hadida, 2009).

The uncertainty regarding a particular task not only influences expert of that particular task in the team to intuit but also influences rest of the team members to accept that intuition. This is because group psychology experts agree that teams, like individuals, are influenced by many environmental settings (Hansen & Wernerfelt, 1989). In fact Klimoski and Mohammed (1994) argued that teams, being the sum of the individuals combined together to achieve a common goal, actually get the same impact from their environment as an individual does. This congruence between individual and team psychology can be witnessed in new product development (NPD) team settings.

NPD teams have experts from various functional areas, so they need to rely on the intuition of various individual experts. When these individual experts come together in a group, they operate collectively as a team and share a team intuition (Dayan & Di Benedetto, 2011; Dayan & Elbanna, 2011). Açıkgöz, Günsel, Bayyurt, and Kuzey (2014) defined team intuition as a team's capability to assess information automatically without the intrusion of rational thinking. NPD team members use this capability while assessing the rational results derived from available information in the form of charts, graphs and other infographics (Dayan & Elbanna, 2011).

Another characteristic of experts in a cross-functional team is the possession of expert power (Bunderson, 2003). French, Raven, and Cartwright (1959) defined expert power as a social power that is derived from a person's technical knowledge. Aime, Humphrey, DeRue, and Paul (2014) proposed that expert power in a cross-functional team is heterarchical in nature. An expert team member possesses expert power for a particular task in which he or she has relevant knowledge, skills and experience. This expert power will be transmitted to another team member according to the change in the nature of the task or action.

While these phenomena, i.e. expert intuition and heterarchical expert power, are documented, separately, in the existing NPD literature, it is not clear yet how the co-existence of these two in an NPD project will influence team intuition in a turbulent environment. Moreover, what is the impact of task uncertainty and environmental turbulence on the expert intuition and team likeliness to accept expert intuition also needs to be explained. This study addresses the interplay between task uncertainty, environmental turbulence, expert and team intuition and expert power by addressing four questions. 1) What is the impact of task uncertainty on expert intuition and the likeliness to accept expert intuition? 2) What is the impact of environmental turbulence on the relationship between task uncertainty and expert intuition, task uncertainty and team likeliness to accept expert intuition? 3) What is the impact of expert intuition and team likeliness to accept expert intuition on team intuition? 4) Does expert power moderate the impact that expert intuition and team likeliness to accept expert intuition have on team intuition?

These phenomena are necessary to understand as it will advance the literature by filling the gaps between expert intuition and team intuition. Moreover, as indicated by Aime et al. (2014), team experts are specialists from different domains, and this is what gives each expert member of the team his or her expert power. This study will further clarify the dynamics of individual–team intuition interactions and their relationship with expert power. This research will help managers to make more efficient and effective decisions in a dynamic and turbulent environment. The impact of an individual's opinion on the overall team decision will help to streamline the decision making process. Team leaders/top managers will get a new and holistic view of team dynamics, which will in turn help them to achieve smoother team operations.

2. Theoretical development

2.1. Task uncertainty and expert intuition

The literature related to individual intuition articulates the importance of intuition especially under uncertain situations (Dane & Pratt, 2007; Khatri & Ng, 2000; Miller & Ireland, 2005; Sadler-Smith & Shefy, 2004). Intuition of an expert is helpful because it is

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