

# **TEAMS IN THE ENTREPRENEURIAL PROCESS: AN INPUT-MEDIATOR-OUTPUT-INPUT (IMOI) APPROACH**

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## **INTRODUCTION**

How do entrepreneurial team processes influence its outcomes? Starting a new venture typically involves a collective effort in which teams play an important part. Despite the prevalence of team effort in the entrepreneurial process, prior research in entrepreneurship has mostly focused on the individual entrepreneur (e.g., Baum & Locke, 2004; Hmieleski & Baron, 2009) or the firm (e.g., Baum, Calabrese, & Silverman, 2000; Shane & Cable, 2002) as main units of analysis to investigate entrepreneurial processes and outcomes. Only few have studied the formation of new venture teams (Ruef, Aldrich & Carter, 2003) and the implications of team composition (Ensley, Pearson & Amason, 2002). Hence, we develop a comprehensive and dynamic theoretical framework, based on the input-mediator-output-input (IMOI) model (Ilgen, Hollenbrck, Johnson, & Jundt, 2005), to describe, explain and predict the dynamic team processes and associated outcomes of entrepreneurial team for different stages of new ventures. We propose that entrepreneurial teams initially experience high uncertainties, have simple organization, and are composed of homogeneous team members. These initial conditions modify the relationship between processes and outcomes as proposed in the IMOI model. However, entrepreneurial teams experience lower uncertainties, have complex organizational structure, and are composed of heterogeneous team members as new ventures grow. In the maturing stage, these temporal changes modify the relationship between processes and outcomes in a direction that is opposite to earlier modifications for entrepreneurial teams in the early stage.

## **THEORETICAL FOUNDATION**

### **The IMOI framework**

The IMOI model states three phases of teamwork. The input-mediator phase (the forming stage) is the early development phase of a team and consists of trusting, planning, and structuring components. The trusting component relates to potency and safety. Potency arises from collective beliefs about the effectiveness of team members (Guzzo, Yost, Campbell, & Shea, 1993) and is positively related to various team performances (e.g., Gully, Incalcaterra, Joshi, & Beaubian, 2002). Safety arises from collect beliefs about safety in taking risks and leads to higher performance (Edmondson, 1999). The planning component relates to information gathering and strategy development. Information gathering refers to ‘information sharing, information seeking and communication’ (Ilgen et al., 2005, p. 523), whereas functional diversity leads to information exchange, which in turn leads to team innovation (Drach-Zahavy & Somech, 2001). Teams with better-developed strategies often share more information and have higher achievement under high workload situations (Stout, Cannon-Bowers, Salas, Milanovich, 1999). Finally, the structuring component relates to shared mental models and

transactive memory. Shared mental models refer to the common knowledge shared by team members (Mohammed & Dumville, 2001) and are positively related to team performance (Marks et al., 2002; Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000), whereas transactive memory is the collective awareness of who knows what. Transactive memory accuracy is positively associated with team performance (Austin, 2003; Lewis, 2003).

The mediator-output phase (the functioning stage) occurs when team members become more familiar with collaborating with others and consists of bonding, adapting, and learning components. The bonding component consists of managing diversity of membership and managing conflict among team members. Heterogeneous teams often have lower satisfaction, lower attraction among team members, lower group cohesion, and higher turnover (van Knippenberg & Schippers, 2007). These teams also have higher conflicts, which tend to lower team performance (Jehn, 1994; De Dreu & Weingart, 2003). On the other hand, heterogeneous teams can produce the most creative and innovative ideas (Ancona & Caldwell, 1992; Bantel & Jackson, 1989; Eisenhardt & Schoonhoven, 1990). In the adaptive component, teams with higher cognitive ability and openness to new experiences have better performance in novel environments (LePine, 2003), whereas helping and workload sharing, which refers to the degree to which team members back up each other can provide both positive and negative consequences to team performance. Further, the learning component consists of learning from minority and dissenting team members, and learning from the team's best members. Teams often ignore information from minority members (Esser, 1998; Wittenbaum, Hubbell, & Zuckerman, 1999), yet this can be cured by the presence of weak subgroups (Gibson & Vermeulen, 2003). Further, teams often fail to develop optimal ways to integrate diverse information (Humphrey, Hollenbeck, Meyer, & Ilgen, 2002) and there is an inverse-U shape relationship between learning and team performance (Bunderson & Sutcliffe, 2003). Finally, the finishing stage is concerned with the dissolution of teams.

## **THEORETICAL DERIVATION**

### **Initial conditions of entrepreneurial teams**

We will first delineate the initial external and internal conditions that entrepreneurial teams experience. We characterize uncertainty as the initial external condition of entrepreneurial teams. New ventures often develop products for a new market or using unconventional technologies (Abernathy & Clark, 1978; Henderson & Clark, 1990). Emerging markets are often characterized by a high degree of uncertainty (Eisenhardt & Schoonhoven, 1990) and many novel technologies fail before they can succeed (Douthwaite, Keatings, & Park, 2001). In this environment, the entrepreneurial outcomes are often unknown and cannot be predicted in advance (Sarasvathy, 2001). Hence, we propose

*Proposition 1. Entrepreneurial teams face a higher degree of uncertainty initially compared to in teams in larger organizations.*

Further, entrepreneurial teams have to deal with initial internal conditions that distinguish them from teams in larger organizations. First, entrepreneurial teams often start as simple, flat structures but grow with the expansion of new ventures. For example, 93.4 % of entrepreneurial teams are composed of three team members or less (Ruef et al, 2003). Further, teams are often composed of members with similar characteristics. Entrepreneurial teams tend to attract other individuals with similar characteristics because familiarity fosters interpersonal attraction, trust,

and understanding that can lead to tighter relationships (McPherson, Smith-Lovin & Cook, 2001; Ruef et al, 2003). Hence, we propose

*Proposition 2. Entrepreneurial teams have simpler organizational structures and are composed of more homogeneous team members compared to teams in larger organizations.*

### **Early stage**

These uncertainties in the early stage often influence entrepreneurial team processes by changing the information exchange and the cognitive processes among team members. A high level of uncertainty influences the input-mediator phase of entrepreneurial teams by limiting the trusting component. Uncertainty limits collective belief about the effectiveness of team members because the distribution of environmental factors, their impacts, and responses to them are unknown. Thus team members are less likely to believe in the effectiveness of other team members dealing with uncertainty and entrepreneurial teams will often experience a lack of potency in the early stage. Potency is demonstrated to influence the performance of mature tasks but not for novel tasks (Marks, 1999). Thus we do not expect the relationship between potency and the performance of entrepreneurial teams that tend to engage in novel tasks. Similarly, uncertainties from various sources will limit the impact of the shared beliefs about a team's tolerance for risk taking on entrepreneurial performance.

Further, uncertainty weakens the influence of the planning component. In uncertain environments, team members are unable to seek and share information because of high uncertainties. Sharing and seeking information become less relevant because no one would know the impacts of such information. Thus information gathering will not be closely related to team performance. Further, the typical planning and execution logic are less relevant when high uncertainties are present and entrepreneurial teams can focus on exploring entrepreneurial opportunities with available means at hand (Saravathy, 2001).

Uncertainty can also weaken the presence of shared mental models and team transactive memories. Because of various uncertainties, team members are likely to have difficulties to reach common knowledge and it is difficult to know the shared knowledge or who knows what amongst team members. Such difficulties can hinder the relationship between the structuring component and the performance of entrepreneurial teams.

*Proposition 3a. Higher uncertainty will diminish the impact of the trusting component on the performance of entrepreneurial teams.*

*Proposition 3b. Higher uncertainty will diminish the impact of the planning component on the performance of entrepreneurial teams.*

*Proposition 3c. Higher uncertainty will diminish the impact of the structuring component on the performance of entrepreneurial teams.*

Since homogeneous team members are also likely to communicate more easily and have greater trust and understanding of each other (McPherson et al., 2001; Ruef et al., 2003), the simple organizational structures and homogeneous composition of entrepreneurial teams in the early stage can influence the input-mediator phase differently and independently from the impact of the high uncertainty.

Simple organizations and homogeneous team members can modify the trusting component. Given the ease of communication and greater trust and understanding, these conditions would enable team members to easily form collective beliefs about the effectiveness of their teams and can result in higher team potency. Efficacy and performance are strongly

related when tasks are interdependent (Gully et al, 2002), where frequent communication is observed. Likewise, psychological support tends to lead organizational support (Edmonson, 1999) and the ease of communication and greater trust and understanding enable team members to be more comfortable taking risk. Therefore, safety and its impacts will be easily observed in teams with simple organizational structures and homogeneous compositions.

For the planning component, entrepreneurial teams with simple structures and homogeneous compositions can come up with plans efficiently but not effectively. Because entrepreneurial teams with simple structure and homogeneous composition are attracted to and freely communicate with each other (Hage, Aiken, & Marrett, 1971; McPherson et al., 2001), they are likely to exchange information freely and resulted in a speedy decision making processes. However, exchanged information among homogeneous team members is generally similar and repetitive because individual with similar demographic characteristics are more likely to have similar cognitive biases, values (Hambrick & Mason, 1984), and knowledge base (van Knippenberg, & Schippers, 2007). As a result, team members can easily reach to a consensus without critically analyzing planning ideas (Whyte, 1989).

Finally, entrepreneurial teams in the early stage have a stronger relationship between the structuring component and the performance of entrepreneurial teams. The sub-components of the structuring component are concerned with collective and common knowledge (Austin, 2003; Mohammed & Dumville, 2001) of entrepreneurial teams. Because the simple structure and homogeneous team members lead to similar values and knowledge bases (Hambrick & Mason, 1984; van Knippenberg, & Schippers, 2007) among team members, collective and common knowledge can be easily achieved and maintained in entrepreneurial teams. Therefore, the relationship between the structuring component and the performance of entrepreneurial teams will be more salient.

*Proposition 4a. Simplicity of organizational structure (and homogeneity of team members) will increase the impact of the trusting component on the performance of entrepreneurial teams.*

*Proposition 4b. Simplicity of organizational structure (and homogeneity of team members) will improve the efficiency of the planning component, but weaken the relationship between the planning component and the performance of entrepreneurial teams.*

*Proposition 4c. Simplicity of organizational structure (and homogeneity of team members) will increase the impact of the structuring component on the performance of entrepreneurial teams.*

*Mediator-output phase*

High uncertainty will partially influence impact of the bonding component on outcomes. We expect that uncertainty will not influence the managing diversity sub-component because it is mainly concerned with the composition of team members and is unrelated to uncertainties from various sources. In contrast, we argue that uncertainty would influence the relationship between managing conflict and outcomes. Because of high uncertainties, conflicts might occur more frequently and we are likely to observe the relationship between managing conflicts and outcomes.

For the adapting component, uncertainty will also partially influence the impact of this component on outcomes. Because high uncertainty is often a key characteristic that teams experience in novel conditions, we expect to observe the relationship between performance in routine versus novel conditions and outcome. In contrast, because of various sources of

uncertainty, information about environments, possible solution is unknown. As a result, helping and workload sharing would be less effective. Therefore, we would not observe a strong relationship between this sub-component and outcomes.

For the learning component, both learning from minority and learning from best members will not be an effective strategy. Learning is about the acquisition of knowledge and is often related directly to experience (Zentall, 2006). Because of the uncertainties in the environment, possible responses and consequences of response, entrepreneurial teams do not have consistent information feedback from their responses. As a result, uncertainty can weaken the relationship between the learning component and the performance of entrepreneurial teams.

*Proposition 5a. Higher uncertainty will increase the impact of managing conflict on the performance of entrepreneurial teams.*

*Proposition 5b. Higher uncertainty will increase the impact of helping and sharing workload on the performance of entrepreneurial teams.*

*Proposition 5c. Higher uncertainty will increase the impact of learning from the most knowledgeable member on the performance of entrepreneurial teams.*

The simple organizational structure and homogeneous team composition will also influence the mediator-outcome phase differently compared to the uncertainty condition. For the bonding component, homogeneous teams will lower the probability of the presence of diverse members (Ruef et al, 2003). Further, the ease of communication resulting from the simple organizational structure can increase the probability of dealing with conflicts among team members. Hence, the relationship between diversity and various outcomes are not likely to arise in this stage and few conflicts would arise among team members.

The impact of adapting component on outcomes will also be salient. Homogeneous team members are likely to help each other because they share personal characteristics (LePine, 2003), leading to higher adaptability of teams. Similarly, simple organizational structure and homogeneity of teams are likely to lead helping and workload sharing behavior. Moreover, the impact of personality on helping behavior is likely to be salient due to similar characteristics of team members (Barrick, Stewart, Neubert, & Mount, 1998).

However, the internal condition will partially influence the learning component. Because of the homogeneous composition, entrepreneurial teams are unlikely to learn and benefits from the minority and dissent (Gibson & Vermeulen, 2003; Esser, 1998; Wittenbaum et al., 1999) and more likely to experience the phenomenon of groupthink (Whyte, 1989). However, the simple structure and attraction among team members will make learning from the team's best member more salient because team members can communicate freely and observe each other's responses and impacts.

*Proposition 6a. Simplicity of organizational structure (and homogeneity of team members) will increase the impact of the bonding component on the performance of entrepreneurial teams.*

*Proposition 6a. Simplicity of organizational structure (and homogeneity of team members) will increase the impact of the adopting component on the performance of entrepreneurial teams.*

*Proposition 6a. Simplicity of organizational structure (and homogeneity of team members) will decrease the impact of the learning from the minority, but increase the impact of the learning from the best member on the performance of entrepreneurial teams.*

## **Mature stage**

However, these initial conditions will change as the new venture become a more stable and larger organization. This continuously changing nature is another salient feature of entrepreneurial teams. First, the uncertainty level that entrepreneurial teams experience is likely to decrease as new ventures grow and mature. First, the environment is likely to become less uncertain. When new ventures mature, the market space that they occupied tends to become clearer and potential consumers are likely to be more established. Further, technology is likely to be improved and become more predictable. Finally, entrepreneurial teams are likely to adopt standardized procedures and become routines (Becker, 1985; Biggart & Beamish, 2003) for deliberate practices. Second, entrepreneurial teams are likely to have more complex organizational structures and become less homogeneous as new ventures grow because of the following reasons. First, new ventures have more customers to deal with and more work loads when new ventures grow. These increases suggest that new ventures need to hire more employees to deal with increased customer demands and workloads. Yet entrepreneurs are often inexperienced and uncertain about dealing with these issues. As a result, they often imitate the behaviors of mature organizations ((DiMaggio & Powell, 1991; Meyer & Rowan, 1977) and simply adopt their organizational structures that are more complicated and more hierarchical. Second, team compositions are likely to be more heterogeneous as new ventures grow. Because the increases in customer demands and workloads, entrepreneurs are likely to recruit diverse individuals with different specializations in marketing, finance, and other functional areas to deal with these tasks more effectively. Therefore, we propose

*Proposition 7. Entrepreneurial teams in the maturing stage will experience less uncertainty, have more complex organizational structures, and composed of more heterogeneous members compared to entrepreneurial teams in the early stage.*

These changes in both external (high uncertainty) and internal conditions (simple organizational structure and homogeneous teams) will reverse prior propositions because these changes would put these conditions into the opposite directions. Therefore, we propose

*Proposition 8. In the maturing stage, the external and internal conditions would influence the relationship between team processes and outcomes in the opposite direction compared to entrepreneurial teams in the early stage.*

## **CONTRIBUTIONS**

This paper contributes to various fronts of management and entrepreneurship research. First, it contributes to entrepreneurship literature by taking an underexplored unit of analysis at the team level. Second, it extends the team literature by drawing contextual factors, such as environmental uncertainty, team composition, and dynamic changes into team processes. Third, we delineate temporal changes and their impacts on entrepreneurial teams. Finally, we draw practical implications to entrepreneurs who engage in team processes by proposing ways to control and manipulate external and internal conditions to best coordinate teams to achieve optimal outcomes.

## **REFERENCES AVAILABLE FROM THE AUTHORS**

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