

# Understanding Goal-Directed Emotions in Agile Software Development Teams

Full Paper

Lan Cao

Old Dominion University  
lcao@odu.edu

Eun Hee Park

Old Dominion University  
epark@odu.edu

## Abstract

Agile software development is people oriented and emphasizes on teamwork. The emotional experiences of the team members may creep up and significantly influence their behaviors. Our study examines the role of emotion in agile software development using a multisite case study of two agile project teams. We develop a framework that explains how the project and individual goals trigger emotions and how the emotions influence behaviors and the project outcome. Our research highlights that agile project goals are interconnected with the individual goal and the misalignment between them bring about negative emotion when team members appraise the goal achievement situations.

## Keyword

Goal-directed emotion, agile software development

## Introduction

Agile methods provide increased adaptability to changes, frequent feedback from customers, and quick delivery of high quality products (Rao et al. 2011). However, agile development creates challenges to project management in various ways. First, unlike traditional projects that balance scope, time and cost, an agile project may prioritize one goal only in a release (Cao et al. 2009). Moreover, the scope may change because of the uncertainties surrounding the market and project. It is difficult to accurately establish cost estimate and timeline for the entire project. In such context, project managers often end up with establishing unrealistic goals concerning the pace of software development to meet customer demand (Rao et al. 2011). Next, agile development approach is different from traditional development approach in that agile approach is people oriented (Conboy et al. 2011) and focuses more on teamwork, and continuous interactions with people. The project managers should take actions to foster a cohesive team culture (McHugh et al. 2012), which is challenging as the agile team members are more likely to involve conflicts among multiple stakeholders (e.g., users, product owners, and Scrum masters) who are involved in the decision making process. Team members constantly inflict pressure on others to deliver products on time (McHugh et al. 2012). As a result, the emotional experiences of the team members may creep up and significantly influence their behaviors.

Graziotin et al. (2015) find a positive relationship between software developers' emotion and self-assessed productivities. However, the detailed mechanism on how developers' emotion influences goal achievement remains under-investigated. Prior studies (Graziotin et al. 2015) acknowledge that there is a lack of study on how the emotion and its associated factors of project team members influence development activities. Particularly, to our knowledge, there is no study investigating this question in the agile development context. Most of prior agile development research has focused on investigating agile development practices and methodological issues (e.g., Batra et al. 2010; Cockburn and Highsmith 2001). We argue that it is important for the agile project managers to understand what shaped the emotional experiences of the team members and how their emotion affects their behaviors, and eventually affect the project goal attainment. Specifically, the present study asks the following research question: *What is the role of team member's emotions in achieving project goals in agile development?* We conducted a case study to investigate the role of emotions in agile software development. We rely on a theory of goal-directed emotions (Bagozzi et al. 1998) as a guide for data collection and analysis. Our study contributes to agile development research by examining: (1) the characteristics of agile project goals and members'

individual goals and their impact on the emotions of members when a project starts; (2) instrumental behaviors of team members to regulate emotion; and (3) the emotions at the end of each development cycle and their influences on project goals.

## **Literature Review**

### ***Dynamic Interactions among Stakeholders in Agile Development***

Agile software development methods aim at satisfying customers by delivering products early and continuously. Even in the late stages of software development, agile project teams respond to changes in requirements. Software products are delivered in a shorter time frame. Agile development research has been focused on agile development practices (Yu and Petter 2014), methodological issues (Rao et al. 2011), agile development adoption, agile project management (e.g., Balijepally et al. 2006; Conboy et al. 2011; McHugh et al. 2012), and impact of organizational culture (e.g., Iivari and Iivari 2011).

Agile team members work together with intense informal communication among each other and receive speedy feedback for their works from their customers (Batra et al. 2010). As a result, agile development focuses on people instead of process (Conboy et al. 2011) and the team culture has a significant impact on the performance (Cockburn and Highsmith 2001).

Agile development involves dynamic interactions among the stakeholders of the project (e.g., team members, customers) (Highsmith and Cockburn 2001). Stakeholders' emotions crop up during interactions and may become crucial over time for project goal achievement. For example, one practice of XP is "pair programming" where two members have complicate structure of interactions for activities such as exploring, fixing, or scrutinizing (Robinson and Sharp 2005). Similarly, Scrum relies on constant communication and collaboration among team members when preplanning is impossible, rendering short feedback cycle critical (Dyba and Dingsoyr 2008). Team members require swift decision-making and should be able to handle ambiguity in a short time frame. Daily stand-up meetings are used as a communication channel through which the team members continuously check the status of a project and adjust to emerging changes. The social nature of agile development has been explored (Whitworth and Biddle 2007). Agile practices provide social support to the team members that increase their experiences of positive motivation, which contributes to the success of agile methods. Research has also revealed that agile project team members bear a definitive accountability of product delivery in a short time frame. They impose pressure implicitly or explicitly on each other to complete the tasks (McHugh et al. 2012). In such situations, high emotional stability can greatly influence the success of agile projects. Balijepally et al. (2006, p. 63) suggest that "lack of 'emotional stability' is associated with traits such as anxiety, hostility, depression, self-consciousness, vulnerability, and impulsiveness." However, research has paid little attention to the influence of emotional experiences of agile team members on project goal achievement.

Therefore, understanding the roles of emotions of agile team members is important for the achievement of project goals. To this end, we draw on the emotion literature, particularly a theory of goal-directed emotions to explore the roles of emotion in the context of agile development.

### ***Goal-directed Emotion***

The theory of goal-directed emotions (Bagozzi 1992; Bagozzi et al. 1998) explains how emotion plays a role in a goal-directed behavior context. The model starts with goal situation, in which the appraisals of imaginary outcomes of achieving or not achieving a goal trigger anticipatory emotions. The anticipatory emotions raise volitions to pursue a goal further and in turn lead to goal directed behaviors. Next, the behaviors bring about goal attainment, which elicits emotions based on the appraisals of the outcomes of goal attainment. The theory suggests that the intensity of anticipatory emotions is important and powerful enough to drive goal-directed volition and instrumental behaviors. Below are several key components of the theory of goal-directed emotions.

**Goal situation.** Goal indicates something that an individual strives to achieve. Goal situation regards the environmental features related to a given goal (Bagozzi et al. 1998). For instance, personal goal for the next four week includes that "I want to decrease [or increase] my body weight over the next four weeks"

(Bagozzi et al. 1998, p. 11). Individuals appraise all relevant features of the environment. The appraisals of the goal features involve various dimensions of appraisals, including pleasantness, certainty, anticipated effort, and responsibility (Frijda et al. 1989). Such appraisals lead to emotional responses.

**Anticipatory emotions.** In the theory of goal-directed emotions, the concept of emotions indicates the discrete emotions that are generated by a particular target, are fairly intense, and last short-time . Anticipatory emotions are raised when individuals imagine a potential consequence of success or failure of their goals (Bagozzi et al. 1998).

**Volitional process.** Volition refers to an individual's act of willing and making a decision (Bagozzi et al. 1998). Volition occurs from individual's belief that s/he can do if s/he wants and tries to do (Bagozzi 1992). Prior study (Orbell and Sheeran 2000) suggests that volitional process initiates the enactment of goal intentions. In the volitional process, individuals develop motivation to take an instrumental behavior and plan to make certain that their behavioral intention is enacted. The volition plays important functions when instrumental behaviors initiate: that is, providing a direction to, motivating, and regulating individuals (Bagozzi et al. 1998).

**Instrumental behaviors.** Instrumental behaviors refer to behaviors or actions performed to achieve a goal (Bagozzi et al. 1998). For instance, to lose weight, individuals engage in instrumental behaviors such as dieting and exercising.

**Goal attainment.** It refers to the consequence of whether a desired goal is achieved or not. This involves individuals' appraisal of the outcomes of accomplishing or not accomplishing an objective (Bagozzi et al. 1998): for instance, an consequence is appraised as goal success, goal failure or impossible to be restored.

**Goal-outcome emotions.** The emotions are elicited from the appraisals on success or failure in goal achievement (Bagozzi et al. 1998). Bagozzi et al. (1998) find that high level of goal attainment is more likely to elicit high level of positive emotions and low level of negative emotions.

This theory offers the following benefits in investigating the emotions of agile team members. First, it facilitates the identification of the importance of goals in agile development. Agile projects aim to set achievable goals of each development cycle and to continuously deliver products that customers desire (Iivari and Iivari 2011). Second, the theory provides a general theoretical framework of how emotion of individuals plays a role in goal-striving contexts. Last, it also allows researchers to investigate the motivations of goal-directed behaviors of agile project team members and understand how agile team members regulate their emotional experiences. Table 1 provides the definitions of the emotions emerged in our data analysis.

Emotion		Definition
Negative	Anxiety	It involves unpleasant feelings of tension, worried thoughts, apprehensive anticipation of future danger, and conservative behaviors (Gambetti and Giusberti 2012).
	Distress	It refers to a feeling of physical or mental anguish or suffering and involves discomfort associated with symptoms of acute, anxiety (Ridner 2004).
	Fear	It is triggered by a threat. It associates with intense negative feelings, strong body manifestations, and avoidance behaviors (Ohman 2008).
	Frustration	It is "the feeling of being annoyed or less confident because you cannot achieve what [an individual] wants" (Cambridge-Dictionary 2017a).
Positive	Enjoyment	It is "the feeling of pleasure caused by doing or experiencing something [an individual] desires" (Merriam-Webster 2017a).
	Excitement	It is the feeling of "enthusiasm and eagerness" (Merriam-Webster 2017b).
	Happiness	It refers to the feeling of comfort, euphoria, cheerfulness and is often synonymous with joy. It is associated with ones' harmony, balance, inner peace, and serenity (Delle Fave et al. 2011).
	Pride	It refers to the feeling of self-esteem and triggers prosocial behaviors including achievement and care-giving (Tracy and Robins 2004).
	Rejoice	It occurs when the actual outcome of a chosen option is better than the actual outcome of a forgone option (Inman et al. 1997).
	Satisfaction	It is "the pleasant feeling [an individual] gets when [s/he] receives something [s/he]

	wanted, or when [s/he] has done or is doing something [s/he] wanted to do” (Cambridge-Dictionary 2017b).
--	---

**Table 1. Definitions of Emotions**

## Methodology

The case study was used to systematically uncover the role of emotion for goal achievement in agile development. We seek to “provide freshness in perspective to an already researched topic” (Eisenhardt 1989, p. 548) and case studies are suitable to inductively build a novel theory. We conduct exploratory analyses on agile development projects.

### Study Sites

Using theoretical sampling (Yin 2009) that is driven by the potential to investigate the role of goal-directed emotion in agile development teams, we selected two agile projects from two organizations as our study sites. They are selected because 1) both are typical agile teams. They employed two of the most commonly used agile methods - XP and Scrum, respectively. Both were small teams, working on projects with evolving requirements. 2) The two teams were in different business domains with different project goals. Thus the sites provided a theoretical relevant context for our study.

Project A was part of a large system developed for banking industry by a large IT service provider. The customer of project A was another team working for the same system. The development team was formed with ten members possessing different experience levels. All the members, except one, had used agile methods before and were comfortable with this approach. The team decided to adopt XP in this project to respond quickly to changes. The schedule for this project was fixed as six months, which was considered tight by the team. The iteration cycle was two weeks. The team successfully delivered the product on time.

Project B was to develop a new financing model and integrate it into the organizational ERP system. The team was inside the IT department of a large manufacturing company. The end users of the product were multiple business units within the organization. The system was considered extremely complex as it involved intertwined business logics and numerous factors. The requirements were difficult to elicit and were not clear to the team at the beginning of the project. The team started with seven members and increased to 11 members from the fifth sprint. The management of the IT department asked the team to adopt Scrum for this project. Project B was the second agile project in the organization. All the team members were trained with Scrum by an outside trainer but most of the members had limited experience on agile development. The team used two-week sprint and tried to follow the Scrum framework strictly.

### Data Collection and Analysis

Data were collected through semi-structured interviews and project documents. In prior studies on emotions, interview has been established as an effective qualitative research method to extract data on emotional experiences and meaningful insights (Rager 2005). We conducted thirteen interviews. Eight interviews were conducted with the project lead, developers, the product manager who served as the surrogate customer in Project A. Five interviews were conducted with the product owner (PO), Scrum master, and team members. Our study focused on understanding the role of project goal situation and members’ emotional experiences in goal achievement. The unit of analysis is individual team member. However, prior studies suggest individual-level emotions can be aggregated to measure the group-level emotion (Kelly 2001). The interviews were audio-recorded and transcribed while we took detailed notes. Internal documents such as product backlog and sprint backlog were reviewed as secondary data sources. Data collection and data analysis were tightly interwoven and conducted simultaneously. As conducting interviews, we analyzed the transcripts. The results from preliminary analysis helped identify additional participants and refine the interview questions (Strauss and Corbin 1994). The theory of goal-directed emotions (Bagozzi 1992; Bagozzi et al. 1998) provided seed concepts for data collection and the initial coding. The data on emotion was collected with the approach commonly employed in the field of psychology. Emotion was expressed with feelings, thoughts and motivational goals (Roseman et al. 1994). Emotion data was then coded based on the definition of emotion types presented in Table 1. Our data analysis helped refine and/or modify these concepts and identify the relationships among them, guiding

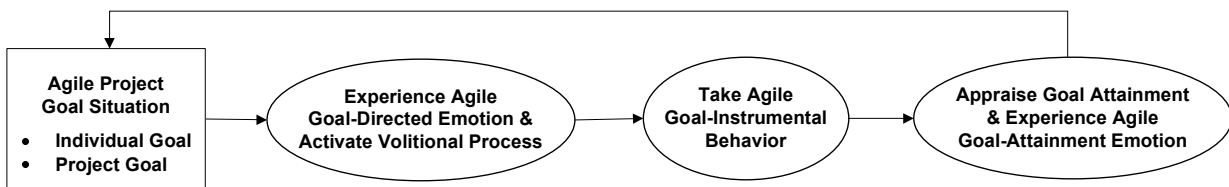
the next round of data collection. Interview transcripts constitute the primary data in this study. To reduce recall bias for the dynamic emotional process, we interviewed multiple participants from each team (Beaudry and Pinsonneault 2010).

The data analysis provided the categories of goals, emotions and behaviors, relationships among them, and patterns in the data, forming the basis of our framework. These concepts were revised based on our further analysis. New concepts and associations among them were identified, and validated and clarified by data from subsequent interviews. Initially, the researchers separately analyzed each case for evidence. This evidence was summarized and entered into a matrix created for intermediate qualitative data analysis. The researchers also actively searched for any new concepts and relationships that emerged. The results were then debated and modified until the researchers reached agreement. The data analysis helped to discover categories, relationships, and patterns in the data, which form the basis of our model. Our framework was presented to key informants in the sites and minor adjustments were made to the terminology used in the framework on the basis of their feedback. Data collection and analysis were conducted until we reached theoretical saturation (Eisenhardt 1989).

## Results

### *Framework of Goal-Directed Emotion Process in Agile Software Development*

Our theoretical framework is presented in Figure 1. For each development cycle, agile team members appraise the project and individual cycle goals. Based on the appraisal, they experience both positive and negative emotions such as excitement or anxiety, which in turn raised volitions. Responding to the volitions, the team members take goal-instrumental behavior associated with development. These behaviors have impact on the members' behavior, and lead to either achieving or failing to meet the goals. Finally, the outcome of the goal achievement leads the members to experience either positive or negative emotions. Then these emotions impact the development of the goals of next cycle. Below, we explain our framework in detail.



**Figure 1. A Framework of Goal-Directed Emotion Process in Agile Software Development**

### *Agile Project Goal Situation*

For the agile team members, the individual goal of each development cycle was set up at the cycle planning meeting. These cycle level individual goals together contribute to the achievement of the project goals if they were in-line with each other. For example, meeting the tight schedule was prioritized as the overall goal of project A. The product was part of a large system and needed to be finished on time so the next phase could start. So at the iteration planning meeting, each team member set up his/her own goal of the iteration by signing up for the tasks. The overall project goals were aligned with the individual goal. The team members focused on delivering the tasks they signed up, while being flexible with the agile practices, knowing that the practices should be tailored to suit the project's need. For example, they tailored the standard agile practice and allocated several weeks focusing on understanding the requirements before the iteration started. The project lead of team A stated:

*"We all knew that following the practices were not the point. Our goal of being agile was beyond those practices -- our goal was delivering values to our customer, that was our goal."*

For project B, the goal of high system quality was prioritized as more important. For such a large organization, the algorithms involved in integrating the new financing model into ERP were very

complicated and the requirements were emerging overtime. The individual goal of the members was to develop high quality product, which was consistent with this project goal. In addition, the project manager set up another overall project goal, which was to ensure Scrum process was followed fully. However, this project goal lacked buy-in from some members. Scrum was introduced to the team by the management. The members were required to adopt Scrum fully to harness the benefits of it. The team was given a 3-day training session by an outside Scrum trainer. Their first Scrum project after the training was not successful as the team gradually moved back to the traditional way of development. In this project, the team was asked by the management to follow all the Scrum practices such as daily Scrum meetings, sprint review meetings and iterative development. The Scrum master commented:

*“This time our goal was to make sure that we would follow the method and implement all the practices. We need to deliver the system, and in the Scrum way.”*

### **Agile Goal-Directed Emotion and Volitional Process**

At the beginning of the project, the project goals and the individual goals of the two projects triggered mixed emotions, but in different ways. The emotions experienced by members of project A were mostly positive, including strong feelings of excitement and pride. It was clear that the project goal aligned well with the individual goals. One developer of project A stated:

*“Our goal was to deliver business values in a tight schedule, with XP we knew what we were doing and where we were going all the time, and we could get things done quickly, move on the right direction. Everyone worked towards that happily, and proudly.”*

As a member signed on the tasks during the iteration planning meeting, s/he was excited about being able to work on things that interested her/him the most. In addition, a member estimated the effort needed for each task, giving the member a sense that s/he set up her/him own goal for each iteration. A junior member considered XP to be an excellent way of learning and growth:

*“I was very excited, it [XP] was a good opportunity to learn, to make you grow fast.”*

The positive emotion led to the volitional process. The team members were inspired and were committed to achieving the project goal, as explained by a developer in project A:

*“We picked the tasks, what we liked to work on based on our estimation and our own velocity. We committed to the work we signed on, as that was our own goals, which was tightly connected to the team goals and we were proud about it.”* The emotions experienced in project B were somewhat different. The individual members were more concerned about the fitting of Scrum method for this project. The project goal to “do Scrum right” created some tensions within the team. Some members felt that they were forced to use Scrum and expressed doubts and anxiety.

*“I was not sure about it, we were asked to do it [adopt Scrum] and do everything, all the practices, the standup meetings, the planning meetings, and the review meetings, things like that. But what about the requirements, the model of pay-on-production was really complicated, we need to have a strong PO [product owner] to give us the requirements, Scrum would not help there.”*

Clearly, the members considered that the project goal of following Scrum process as a distraction from obtaining the goal of developing a high quality product. The misalignment between the two goals triggered negative emotional experience. The members expressed concern about Scrum, which was sensed as “forced” to the team.

The anxiety about the top down approach of introducing Scrum sometimes led to confusions. Some members believed that many practices and artifacts such as estimating tasks, retrospectives, and stand up meetings were mandatory. They denied their values even though they were happy that they could see the results of their work at the end of each sprint. One developer commented:

*“I liked the iterative development and feedback from the customer, but I didn’t think that made us work harder or anything, we did work harder because we had deadlines constantly, one after another, that was a different reason.”*

## **Agile Goal-Instrumental Behavior**

We have observed that the volitional process of the members affected their behaviors. The team members stayed focused on the individual goals and project goals all the time. They collaborated with each other and engaged in intensive communication. They helped each other and asked for help when needed. The team lead stated:

*“Everybody was trying to do his or her best, and helped each other, because we all wanted the same thing--- see the system grow iteration after iteration, and deliver [the system] on time.”*

The team members welcomed feedback, both positive and negative, and treated feedback as opportunities to learn and improve. One developer commented:

*“The feedback was for the team to improve. In the retrospectives we tried to identify the opportunities to improve our process.”* The volitional process triggered by the anxiety in project B caused the team to deviate from their individual goals. Some members did not communicate and were not willing to commit to the team. They were late for the standup meetings, or did not attend them. In the planning meetings, a few were reluctant to do estimation. As a result, they did not commit to the completion of the signed tasks for the sprint.

Conflicts developed frequently and some members were defensive and considered the negative feedback as embarrassment. The product owner was expected to provide all the needed information and was blamed for the difficulties in development. The team also expected the Scrum master to resolve all the issues they encountered and the Scrum master was heavily burdened, explained by the Scrum master:

*“Sprint became mini waterfall. The team expected a detailed description of the stories from the PO [product owner], and then they worked on themselves, dumping the stories to the tester towards the end of the sprint. The tester struggled, of course.”*

## **Goal Attainment and Agile Goal-Attainment Emotion**

The two teams appraised the project outcome and displayed varying emotions at the end of each development cycle. Members of project A mostly showed satisfaction, happiness, and pride, whereas members of project B displayed both rejoice and frustration.

The feedback of the goal attainment at the end of each cycle provided the sense of value of the work. The features finished were delivered to the customer and feedbacks were given to the team. One member of project B stated:

*“It was great to get the feedback at the end of the iteration. What you had done, the value of it, become clear to me and that motivated me because I saw the value of my work, and it was certainly enjoyable working this way.”*

However, the members of project B felt that the other practices did not have much value:

*“In many ways I enjoyed Scrum. I liked that we could track our progress using burn down chart. It felt good removing a card from the feature board. But some practices such as the sprint review meetings, we did those because our trainers said they were essential, and the planning meetings, we often did not have enough information during the meetings about the tasks. It would be better if the PO spent time learning the model first, but now it was frustrating sometimes as everything was uncertain.”*

However, the emotions did not stay the same across all the cycles. The initial excitement was diminishing and some members of both teams were stressed out by the constant “death march” when the projects entered later cycles. Project A made some adjustment by assigning a research day in between the iterations. Project B, however, did not take any action to address this issue as it was not defined in Scrum framework. One developed expressed the stress:

*“Initially we were ok but when we were in our 16th or 17th Sprint, I started to feel some burnt out. From week to week I felt like I was racing against the clock to maintain the velocity. When we finished one sprint we started the planning for the next sprint and then, the next round again.”*

As a result, conflicts between the product owner and the Scrum master occurred. While the Scrum master noticed the sign of burnout and tried to slow down the pace, the PO preferred to keep the team velocity constant. The Scrum master commented:

*“I needed to address this [distress] by adjusting the pace so it was sustainable. People were not happy, they were stressed, the team moral was getting down...but I couldn’t convince the PO that we should commit to less stories each sprint. He said that we should follow the [Scrum] framework. I was upset.”*

The above goal-attainment emotions in turn influenced the goal situation for the next cycle. The positive emotions experienced by project A caused the members more engaged in setting up individual goals by identifying the set of task for the cycle and estimating of tasks. The negative emotions experienced in project B, however, caused the members to focus only on making a list of tasks without much commitment. At the end, the overall project goal was not attained. The product delivered had problems when it was integrated with the ERP system.

## Discussion

This study developed a framework of goal-directed emotions in agile software development team. The results of our study have several implications on agile development research.

### **Implications for Research**

First, our results show unique characteristics of agile project goals and goal setting practice. Prior studies suggest that agile project teams face difficulties in setting project goals due to the uncertainties inherent in project environment (Rao et al. 2011). In a traditional project, the focus of goal setting is on meeting functional requirements and technical specifications as defined during a design phase (Dvir et al. 2003). Our results show that agile project goals are interconnected with the individual development cycle goal. The overall project level goal is broad and has a long time frame. In contrast, the individual development cycle goal is specific, achievable, and has a short time frame. The overall project level goal usually includes the priority in the project (e.g., customer satisfaction, delivery on time or quality). This priority influences individual cycle goals.

Second, this study investigates the impact of goals on the emotions of project team members. The individual goals may or may not align with the project goal. When the individual goals align with the project goal, the team members’ goal-directed emotion are mostly positive. However, the team member may experience negative emotion if there is a conflict between the individual goal and the project goal. This advances prior studies that investigated socio-emotions (e.g., animosity, annoyance) that are generated in relationship conflicts and emotional stability as positive traits of software development team members (Balijepally et al. 2006). According to our results, individual goals bring about either positive or negative emotion (called goal-directed emotion) when team members appraise the goal achievement situations. Goal-directed positive emotions include excitement, inspiration, and pride whereas goal-directed negative emotions subsume anxiety, fear, and distress. These emotions are clearly directed by the goal situations. For example, if the project goal is considered as “forced” and not aligned with the individual goal, it is not embraced by the team members and negative emotions are expressed. Adopting an agile method and following agile practices do not generate a positive emotion in the team automatically. The managers have to explicitly build cohesiveness by carefully setting up the project goal structure.

Finally, our results suggest that projects goal situation play an important role in motivating team members to engage in instrumental behaviors toward achieve their goals. Goal-directed positive emotion creates a positive impact on team members, enabling them to share the same goals and focus on achieving goals and taking actions to improve the process. In contract, goal-directed negative emotion induces defensive behaviors and the lack of commitment to the goals. This finding extends prior studies that identified motivational factors that foster agile team members to encourage collaboration and goal attainment. Balijepally et al (2006) identify personality traits of agile project team members (e.g., conscientiousness, extraversion, and openness to experience) as motivation factors. Yu and Petter (2014)



suggest shared mental models. Our study identifies additional motivation factors and provides better understanding of agile development process.

### **Contribution to Practice**

This study also contributes to agile project management practices. Our findings suggest that project managers should understand the impact of goal-directed emotions on the behaviors of the team members, which eventually influences the project goal attainment. The project managers should pay attention to the following aspects: First, the managers should carefully examine the project goals and ensure the alignment between the project goals and the members' individual goal. To achieve the alignment, the managers should form team with person who has the right mindset. Second, they need to take actions to advocate the project goals to ensure its buy-in from the members. Finally, the manager should be sensitive to the signs and the influence of certain emotions that may lower the team moral. Project managers should also understand the dynamics of goal-directed emotions. They should make adjustments such as the development pace to mitigate anxiety that may have negative impact on achieving the project goals.

### **Conclusion, Limitation and Future Research**

This study uses the theory of goal-directed emotions (Bagozzi et al. 1998) to examine the role of the emotional experience in agile development projects. Using the case study method, we developed a framework that depicts the influences of agile goals and team members' emotional experiences on agile development process. This study sheds light on agile development research that is mostly concerned with development practices, methodological issues, development adoption, project management, and impact of organizational culture.

Since we explored two agile projects from two organizations, the generalizability of findings may be undermined by the context of the study. Thus, further empirical studies to investigate the validity of the findings are required. Although the well-established research design was employed to explore the role of emotion retrospectively, recall bias in the informants might be conceivable. To alleviate this risk, we employed multiple respondents from each organization and triangulated our data from various types of documents publically available.

In the future study, we plan to explore how the emotion at team level influence ones at individual level, and vice versa. The impact of other factors such as personality traits will also be investigated.

### **REFERENCES**

- Bagozzi, R.P. 1992. "The Self-Regulation of Attitudes, Intentions, and Behavior," *Social Psychology Quarterly* (55:2), pp. 178-204.
- Bagozzi, R.P., Baumgartner, H., and Pieters, R. 1998. "Goal-Directed Emotions," *Cognition & Emotion* (12:1), pp. 1-26.
- Balijepally, V., Mahapatra, R., and Nerur, S.P. 2006. "Assessing Personality Profiles of Software Developers in Agile Development Teams," *Communications of the Association for Information Systems* (18:1), pp. 55-75.
- Batra, D., Xia, W., VanderMeer, D., and Dutta, K. 2010. "Balancing Agile and Structured Development Approaches to Successfully Manage Large Distributed Software Projects: A Case Study from the Cruise Line Industry," *Communications of the Association for Information Systems* (27:1), pp. 379-394.
- Beaudry, A., and Pinsonneault, A. 2010. "The Other Side of Acceptance: Studying the Direct and Indirect Effects of Emotions on Information Technology Use," *MIS Quarterly* (34:4), pp. 689-710.
- Cambridge-Dictionary. 2017a. "Frustration." Retrieved April 21, 2017, from <http://dictionary.cambridge.org/us/dictionary/english/frustration>
- Cambridge-Dictionary. 2017b. "Satisfaction." Retrieved April 20, 2017, from <http://dictionary.cambridge.org/us/dictionary/english/satisfaction>
- Cockburn, A., and Highsmith, J. 2001. "Agile Software Development: The People Factor," *Computer* (34:11), pp. 131-133.
- Conboy, K., Coyle, S., Xiaofeng, W., and Pikkarainen, M. 2011. "People over Process: Key Challenges in Agile Development," *IEEE Software* (28:4), pp. 48-57.
- Delle Fave, A., Brdar, I., Freire, T., Vella-Brodrick, D., and Wissing, M.P. 2011. "The Eudaimonic and Hedonic Components of Happiness: Qualitative and Quantitative Findings," *Social Indicators Research* (100:2), pp. 185-207.

- Dvir, D., Raz, T., and Shenhar, A.J. 2003. "An Empirical Analysis of the Relationship between Project Planning and Project Success," *International Journal of Project Management* (21:2), pp. 89-95.
- Dyba, T., and Dingsoyr, T. 2008. "Empirical Studies of Agile Software Development: A Systematic Review," *Information and Software Technology* (50:9-10), pp. 833-859.
- Eisenhardt, K.M. 1989. "Building Theories from Case Study Research," *Academy of management review* (14:4), pp. 532-550.
- Frijda, N.H., Kuipers, P., and Ter Schure, E. 1989. "Relations among Emotion, Appraisal, and Emotional Action Readiness," *Journal of personality and social psychology* (57:2), pp. 212-228.
- Gambetti, E., and Giusberti, F. 2012. "The Effect of Anger and Anxiety Traits on Investment Decisions," *Journal of Economic Psychology* (33:6), pp. 1059-1069.
- Graziotin, D., Wang, X., and Abrahamsson, P. 2015. "Do Feelings Matter? On the Correlation of Affects and the Self-Assessed Productivity in Software Engineering," *Journal of Software: Evolution and Process* (27:7), pp. 467-487.
- Highsmith, J., and Cockburn, A. 2001. "Agile Software Development: The Business of Innovation," *Computer* (34:9), pp. 120-127.
- Iivari, J., and Iivari, N. 2011. "The Relationship between Organizational Culture and the Deployment of Agile Methods," *Information and Software Technology* (53:5), pp. 509-520.
- Inman, J.J., Dyer, J.S., and Jia, J. 1997. "A Generalized Utility Model of Disappointment and Regret Effects on Post-Choice Valuation," *Marketing Science* (16:2), pp. 97-111.
- Kelly, J.R. 2001. "Mood and Emotion in Groups," in *Blackwell Handbook of Social Psychology: Group Processes*, M.A. Hogg and S. Tindale (eds.). Malden, MA: Blackwell Publishing, pp. 164-181.
- McHugh, O., Conboy, K., and Lang, M. 2012. "Agile Practices: The Impact on Trust in Software Project Teams," *IEEE Software* (29:3), pp. 71-76.
- Merriam-Webster. 2017a. "Enjoyment." Retrieved April 20, 2017, from <https://www.merriam-webster.com/dictionary/enjoyment>
- Merriam-Webster. 2017b. "Excitement." Retrieved April 20, 2017, from <https://www.merriam-webster.com/dictionary/excitement>
- Ohman, A. 2008. "Fear and Anxiety: Overlaps and Dissociations," in *Handbook of Emotions*, M. Lewis, J.M. Haviland-Jones and L.F. Barrett (eds.). New York, NY: Guilford Press, pp. 709-729.
- Orbell, S., and Sheeran, P. 2000. "Motivational and Volitional Processes in Action Initiation: A Field Study of the Role of Implementation Intentions," *Journal of Applied Social Psychology* (30:4), pp. 780-797.
- Rager, K.B. 2005. "Self-Care and the Qualitative Researcher: When Collecting Data Can Break Your Heart," *Educational Researcher* (34:4), pp. 23-27.
- Rao, K.N., Naidu, G.K., and Chakka, P. 2011. "A Study of the Agile Software Development Methods, Applicability and Implications in Industry," *International Journal of Software Engineering & Its Applications* (5:2), pp. 35-45.
- Ridner, S.H. 2004. "Psychological Distress: Concept Analysis," *Journal of Advanced Nursing* (45:5), pp. 536-545.
- Robinson, H., and Sharp, H. 2005. "The Social Side of Technical Practices," in *Extreme Programming and Agile Processes in Software Engineering*, H. Baumeister, M. Marchesi and M. Holcombe (eds.). Sheffield, UK: Springer, pp. 100-108.
- Roseman, I.J., Wiest, C., and Swartz, T.S. 1994. "Phenomenology, Behaviors, and Goals Differentiate Discrete Emotions," *Journal of Personality and Social Psychology* (67:2), pp. 206-221.
- Strauss, A., and Corbin, J. 1994. "Grounded Theory Methodology: An Overview," in *Handbook of Qualitative Research*, N.K. Denzin and Y.S. Lincoln (eds.). London, UK: Sage Publications, pp. 273-285.
- Tracy, J.L., and Robins, R.W. 2004. "Show Your Pride: Evidence for a Discrete Emotion Expression," *Psychological Science* (15:3), pp. 194-197.
- Whitworth, E., and Biddle, R. 2007. "The Social Nature of Agile Teams," *In Proceedings of the AGILE 2007*, Washington, DC, USA: IEEE Computer Society, pp. 26-36.
- Yin, R. 2009. *Case Study Research: Design and Methods*. Newbury Park, CA: Sage Publications.
- Yu, X., and Petter, S. 2014. "Understanding Agile Software Development Practices Using Shared Mental Models Theory," *Information and Software Technology* (56:8), pp. 911-921.