43. Emotions in innovation development

Birgitta Sandberg, Leena Aarikka-Stenroos and Ilkka Kettunen

Outline of the topic

Emotions have been acknowledged to often drive innovative behaviour and shape innovation-oriented sensemaking and are, therefore, relevant to be understood and utilized in innovation development (i.e., in the process of transforming novel ideas into successful applications). Here, we apply a cognitive appraisal perspective to emotions that regards emotions as emerging from our cognitive appraisal of events, individuals, issues, or situations and that are often expressed physically. This perspective has become prominent in the field of the psychology of emotions. By definition, emotions are typically short-term feelings that arise because of something and are expressed in behaviour, whereas moods (the states of mind) are subtler, without a definite object and tend to last longer. In this chapter, the primary point of interest lies in emotions, since they have a clearer link to both triggers (i.e., it seems to be easier to influence emotions than moods) and outcomes (i.e., their importance to innovation development seems to be more apparent). Emotions in innovation development can vary from the positive to negative, and their impact can occur on an individual or a group level.

Conceptual overview and discussion

Diversity of emotions

Emotions are inclined to impact judgements when people face complex tasks and the need for extensive information processing. Their role is further emphasized in ambiguous and uncertain situations, when new information needs to be assimilated to make accurate judgements and good decisions. This description seems to fit particularly well the context of innovation development and it seems that the role of diverse emotions in innovation development should be both acknowledged and studied further.

The diversity of emotions originates from different basic emotions that are segregated based on various categorizations and tend to follow the division between positive and negative emotions – positive emotions being pleasant and agreeable and negative emotions being unpleasant and disagreeable. In business sciences, Laros and Steenkamp divide emotions into eight basic ones, of which four are positive (affection, contentment, happiness, and pride) and four are negative (anger, fear, sadness, and guilt). These basic emotions may be further divided into subcategories. For example, happiness can be further divided into enthusiasm, hopefulness, joyfulness, optimism, and relief.

Past research has shown that distinct emotions are inclined to initiate different types of behavioural outcomes. Current knowledge of emotions and their outcomes in the different tasks of innovation development suggests that positive emotions may build resources, ignite group flow and creative collaboration, and are important in terms of the performance of innovation development. However, negative emotions, particularly highly intense ones involving anger and frustration, may also enhance creativity. For example, dissatisfaction with an existing problem can act as a trigger for creative problem-solving. Consequently, there is an urgent need to better understand diverse emotions, their triggers, and their outcomes in innovation development.

Dynamics of emotions

Emotions tend to evolve in social interactions when a group of individuals interacts extensively during a given time frame for innovation development. By their very nature, emotions are constantly evolving, and, in a single situation, an individual can rapidly and even simultaneously experience different intensities of one emotion as well as even opposite emotions. Furthermore, emotions are contagious: positive emotions expressed by one individual in a group tend to spread as they fuel more positive emotions in others, whereas expressed negative emotions may lead to more diverse emotional responses in others, as past research has evidenced.

In addition, identical triggers may provoke different emotions, as individuals interpret triggers differently. The implication of this is that, even though group members are often exposed to the same events, the emotions originally experienced by individuals based on those events may not necessarily be

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the same. Through social interaction and the reappraisal of triggers, emotions are likely to become increasingly similar within a group. Moreover, individuals constantly compare their own reactions with those of others who are relevant to them, and social pressures toward unity tend to make the emotions converge. Thus, research shows that shared individual emotions can become collectively experienced emotions (i.e., transform into group emotions). However, there is a lack of empirical studies examining how individual emotions turn into group emotions and how group emotions trigger individual emotions in innovation development.

Application: emotions in the early innovation development process

Since existing knowledge on diverse emotions and their dynamics in innovation development is scarce, an inductive, qualitative, and longitudinal case study approach was adopted to explore both emotion diversity and dynamics in innovating. The case focused on the early innovation development process (i.e., a process including idea generation and conceptualization activities), since previous and relatively scarce studies examining emotions in innovation development indicate that, especially at that stage, people experience strong, mixed emotions influencing their behaviour and decision-making. The case consists of a project aiming to design intelligent learning environment equipment, conducted in a northern European medium-sized firm. The project was run by a team of three industrial designers – the most experienced of whom was appointed as the design manager. Two or three assistants, the company management team comprising the founder or owner, sales and marketing teams, and other managers were involved, allowing us to examine both individual and group emotions related to innovating.

The data were gathered in real time through the early innovation development process, which lasted over 10 months. Thus, the case description relies on a versatile data set consisting of diary data, interviews, videos, memos, notes, and photographs. The data were analyzed inductively, with the focus placed on identifying and classifying diverse emotions from the data by interpreting both the explicit and implicit expressions of diverse emotions, their dynamics (in time and at the individual level as opposed to the group level), emotion triggers, and outcomes in innovating. Hence, this section addresses the full range of diverse and dynamic emotions seen in the early innovation development process.

Triggers of diverse emotions

The diversity of positive and negative emotions existed throughout the full front-end process, and all basic emotions played a role at the front end. Some basic emotions, however, were clearly more accentuated than others. Contentment and happiness – especially enthusiasm – were the most common positive emotions, and anger and fear were the most common negative ones.

Three categories of emotional triggers were identified in the studied front-end innovation project. Emotions seemed to be frequently evoked by work-related events, usually accomplishments (or the lack of them), by the overall goal of the project, or by meetings with the management of the company. On some occasions, the employees' work itself created emotions, particularly positive emotions, especially when the designers could draw sketches. Furthermore, emotions were evoked by individuals involved in the project; often these individuals seemed to trigger negative emotions.

Diversity of emotions

The start of *idea generation* was characterized by diverse – and even reverse – emotions. At the very beginning, when preparing for the ideation, the design team members and the design manager were all very enthusiastic about the project; after all, it was their opportunity to work on a dream project. However, there was also some nervousness related to the unclear information given to them by the company's management regarding what was expected of them. During the idea-genesis phase, the design manager accidently upset and frustrated the design team members by joking in front of the firm's management team that his team had not yet accomplished anything. Thus, the team started to generate ideas with low spirits. However, they became enthusiastic again as the work progressed. Their flow was productive, and the team created 600 ideas in all. Next, the team needed to screen the ideas and filter out more than 96 percent of them. This was exhausting work, and the designers were bored with the long

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hours of screening work. The design manager and the whole team were also discontented, because they did not receive enough feedback from the management. This caused worry in the design team, and the idea-screening phase ended with 20 ideas to be taken forward, largely based on the design team's own selection process.

In addition, *conceptualization* started with the concept generation phase, which was a time of enthusiasm among the design team members. Difficulties in the beginning were mostly solved; the project advanced, and the designers felt they were doing what they knew best. When they later needed to select concepts to turn into products and compete with each other in front of the management team, emotional tensions, such as contentment mixed with embarrassment, were evident among the designers. However, the concept finalization stage (i.e., the time spent fine-tuning the selected concepts before handing them over to the firm's own development and production unit) can be characterized as a euphoric time period for the designers. The design manager felt relieved but recognized some feelings of helplessness, since the concepts they had become attached to were, from that moment on, in the hands of others.

Dynamics of emotions between the individual and the group

When examining the dynamics of emotions between the individual and group levels, two types of dynamic patterns emerged from the data: *emotional convergence* and *emotional divergence*. These dynamic patterns conceptualize how emotions emerge and evolve between individuals and the group due to emotional contagion. The following episode displays them both. On the day he was about to oversee the idea-genesis phase, the design manager felt mainly enthusiastic. When the designers arrived, Designer B was very angry at the design manager and openly confronted him about having accused them of being unproductive. Here, we witness emotional divergence and clashing emotions. The design manager felt embarrassed and apologized to the designers. However, Designer A also began to sulk, which indicated that he was angry with the design manager. Thus, the anger seems to have been contagious. The idea-genesis phase, which was supposed to have been creative and fun, began in silence. Nevertheless, the work itself generated enthusiasm and happiness for both the design manager and the designers. Over time, positive emotions spread to the angriest designer, Designer B, and these positive emotions *converged* into a positive group emotion, and the whole design team was in a good mood again.

Outcomes of emotions in innovation

Our analysis of the outcomes of emotions shows that positive outcomes dominated, originating from positive emotions, such as contentment and/or happiness. The main outcomes of positive emotions were *positive interaction* (such as interaction expressing support, encouragement, or appreciation) and *experienced productivity.* Interestingly, on some occasions, positive outcomes also originated from negative emotions (e.g., frustration evoking the desire for constructive justifications or anger promoting independent decision-making).

In terms of the negative outcomes of emotions, the most common outcome was experienced *lack of productivity* triggered by negative emotions – namely, fear or sadness. We also identified other negative outcomes, such as *decreased or negative interaction* (i.e., interaction expressing disapproval, sarcasm, or cynicism), originating from anger. It is notable that, in this case, only once did a negative outcome originate from a positive emotion: a designer stated that he was so excited about the project that he had difficulty sleeping.

Critical summary

This entry has discussed the diverse emotions in innovation development and presented a case focusing on the early innovation development process and depicting the triggers that evoke emotions, the dynamics of individual- and group-level emotions, and the outcomes that follow the emotions. By revealing how diverse positive and negative emotions emerge, vary, and shape the innovation process, this entry contributes to the emerging knowledge on emotions in innovation development. Instead of providing a rational, decision-making approach to innovation, it extends the understanding of innovation from a novel angle: emotions. Furthermore, it explicitly shows both the spectrum and dynamics of diverse emotions felt and expressed during innovation development,

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thus answering the call for longitudinal views on changing emotions.

This entry supports the initial findings by Akgün and colleagues on the role of positive emotions in development and places negative emotions under scrutiny. It shows how emotions can considerably advance or hinder the progress of innovation development: positive emotions seem to act as important catalysts in innovation development, whereas negative emotions play a rather more repressive role. It is noteworthy that this chapter indicates that emotions are mostly self-reinforcing; however, emotions and their outcomes can also be contradictory and unexpected (e.g., negative emotions creating positive outcomes). Thus, these dynamics add much more complexity to the phenomenon and create challenges for innovation development.

Furthermore, the empirical application highlights the interplay of individual- and group-level emotional processes during the front-end innovation process, and increases our understanding of the complex relationship between emotions at different levels, thereby answering the call from Ashkanasy and Humphrey to take into account the interrelatedness of emotional variables at the different levels of an organization as well as the call from Menges and Kilduff to analyze how individual emotions turn into group emotions. In fact, interaction is a key element in emotional convergence and the formation of group emotions. Group emotions seem to emerge when individual emotions are shared informally among individuals going through the same experiences. Additionally, emotional contagions and emotional transfers take place within the team and cross boundaries between the team and the firm.

This chapter also suggests some relevant *managerial insights*. An increased understanding of emotions may help innovation managers and team workers identify and handle relevant triggers; consequently, they can better manage delicate creative moments and mitigate conflicts. This can, thus, increase development efficiency. Changing emotions require managers to continuously monitor the emotions of team members and the emotional climate of the whole team. In addition, managers and teams could develop procedures to provoke positive emotions that may fortify the advancement of innovation development. However, a lack of information, unclear assignments, and the resulting confusion are essential characteristics of the early innovation development process. These points can easily turn into catalysts for negative emotions. Therefore, it is also important for members of the innovative team to be aware of the probability of negative emotions arising and to accept them as part of their work. Furthermore, the value of negative emotions in the innovation process should also be acknowledged.

By focusing on one successful project and collecting longitudinal data, this study was able to capture the dynamics and complexities of emotions during innovation. Nevertheless, it is evident that a single-case study has limitations. The studied innovation project addressed generating radical innovation for both customers and the firm. This context should be considered when evaluating the transferability of the results. In reality, few existing studies on emotions in innovation development tend to focus on radical innovations, in which the emotional rollercoaster is often accentuated due to high ambiguity and uncertainty. Consequently, there is a lack of research on emotions in incremental innovation development.

Furthermore, this case was set in a northern European context. Other culturally distant settings can offer different observations on emotions among individuals and groups. Although this study focused on basic emotions felt across the world, cultures differ in terms of the frequency, self-assessment, and desirability of specific emotions. Thus, further studies in different cultural contexts are encouraged. We are only now beginning to understand the role of emotions in innovation development. Hopefully, this entry will inspire further studies on this complex but significant issue.

Further readings

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