

ABSTRACT

Behavioral Aspects of New Product Development: An Empirical Study of Hi-Tech Firms in India

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New product development (NPD) process is a complex and multifaceted process that involves people, technologies, resources, and a variety of cognitive and behavioral schemes. Research on new product development challenges scholars due to the complex orchestration of technology, human behavior and cognition, and social dynamics of the development procedures. In recent years, India has seen a rapid growth in new product development and R&D centers in hi-tech industries. Our understanding of R&D and new product development processes are limited in emerging economies such as India. Cost-effective measures to condense new product development processes, resource-constrained conditions, and pressures to improve product innovations have motivated new research aimed at improving the development process. This especially holds true in cases of emerging economies such as India where lower costs and resource constraints are integral parts of the context of new product development, even for large organizations. Within the new product development processes, prior literature suggests that the underlying behavioral aspects are crucial parts of NPD processes as they design and detail out agendas to generate innovative ideas, to solve problems, and to mold these innovative ideas into streams of new products.

This dissertation examines the role of behavioral factors that influence the new product development decisions and how these decisions impact new product development performance. We analyze our research problem by conducting the research in new product development divisions of six hi-tech firms in India. The research established formal propositions and theoretical arguments for identifying, representing, and visualizing the arguments in order to extract a richer scholarly understanding of behavioral aspects in NPD. During the course of this research, the theoretical model was developed to reflect the proposed relationships using a hypothetico-deductive model and tested using a causal approach quantitatively. The analysis was done on the corpus of primary data gathered from development managers on their last developed product. Finally, this research presents an applied behavior framework for highlighting the effects of innovative behavior and political skills of new product development managers.

In large organizations, there are dedicated divisions for product development and key objectives of new product development managers are to solely operate and engage towards creating new products. New product development managers need to think of new ideas and behave innovatively to create different kinds of patterns throughout each development stage. Apart from their technical expertise, they need to be sensitive to their situation and context in order to be able to intervene with resources at hand and organizational structures during the development. As the development progresses, managers are involved in a complex and evolving decision-making process while engaging with tools, resources, and technologies. Decisions on how recombining and re-inventing of resources take place are an integral part of the development process and are a key focus of this dissertation. We analyze “making-do” aspects and decisions of development process using bricolage (recombining and reinventing of the resources at hand to create value) and control oriented (CO) decisions (gaining control of an unpredictable and uncertain future by using means at hand, partnerships, pre-commitments, affordable losses and acknowledging the unexpected turns). This research analyzes the impact of innovative behavior of NPD managers on bricolage, control oriented decisions taken and performance during the NPD process using structural equation modeling. We also analyze effects of decisions on performance and their mediated effects on the behavior-performance relationships. Different types of decisions around making-do with resources at hand are found to be associated with development stages. We found statistically significant evidence that bricolage decisions mediate the relationships of idea generation behavior, idea promotion and realization behaviors on the performance (outcomes and efficiency) of NPD process.

Finally, as a social activity, at the heart of product development is the development of a shared understanding of the development problem. The development processes inherently include experimenting, creatively using tools and technology, innovations in combining and transforming resources and finally, gathering managerial support and compliance for such activities. The development requires organizational resources and support to proceed forward, where the NPD managers ought to be politically skilled and active within their organization. By pursuing and persevering with the management and colleagues, legitimacy is gained and support is gathered for development procedures. Often, the managers accomplish this by usually engaging in politics at workplace and using interpersonal relations. Their ability to establish such engagements is reflected by how politically skilled they are. This dissertation analyzes the political aspect of NPD by exploring the impact of political skills of NPD managers on the development process. This research aimed to investigate the moderating effects of individual political skills and abilities on the relationships of decisions-performance in the NPD process. To study the effects of political skills in NPD, data from NPD managers was analyzed using hierarchical regression. Evidence from the study shows that relationships between bricolage decisions and performance get strengthened with higher political skills.

The research was designed to study the NPD managers involved in developing new products at product development centers in large sized hi-tech firms in India. Using a survey methodology approach, the data was collected at six organizations in hi-tech industry such as telecommunications, computer hardware and gaming devices. With 346 product development managers participating in the study to report data from their last developed product, the final dataset consisted of 215 usable responses. Examining the dataset using statistical analyses techniques of hierarchical regression and structural equation modeling, the proposed model was analyzed and tested. Quantitative analyses report significant direct effects of innovative behavior of NPD managers on their efficiency and outcomes. Mediation effects of bricolage decisions on the behavior-performance relationships during the process are also found positive and significant. The analyses also confirm moderating effects of political skills on the decision-performance relationships of their NPD process for both efficiency and outcomes. The results found no significant relationship between innovative behavior and control oriented decisions (means and partnership orientations). CO decisions were found to have no significant mediation effect on the relationships between innovative behavior and performance. The results also show no significant relationship between CO decisions and performance.

This study contributes to the field of new product development through a better understanding of behavioral patterns, decisions and performance. Analyzing the fieldwork and evidence collected from India, this research theoretically and empirically contributes to the new product development scholarship with an emerging economy perspective. These findings contribute in several ways. First, it enhances understanding about how dimensions of innovative behavior influence the new product development process outcomes and efficiency. Second, it provides theoretical arguments and empirical support for how bricolage mediates that relationship. It reflects upon how innovative behavior, through bricolage, translates into real world artifacts. And lastly, it establishes the role of political skills that moderate the decision-performance relationship, thereby reflecting upon the importance of politics at individual level in new product development processes. The research in this dissertation demonstrates empirical evidence for bricolage at play in NPD processes in India. It shows how bricolage plays crucial roles in the development process and impact outcomes and efficiency in NPD in corporate settings. With results on bricolage decisions providing a greater understanding of its effects on performance, the research also provides support for political aspect of NPD process by exploring its effect on bricolage-performance relationship. Hence, using the applied behavior and decision lenses, this study contributes to the technology and innovation management literature with a multi-disciplinary perspective. The research demonstrates that behavioral aspects in new product development, is a promising front to evaluate and model the psychosocial behaviors and cognitive of development managers.

This research has practical implications for development processes in resource constrained environments, especially, while operating in emerging economies. The research informs the practice that managers need to behave innovatively during both generation and promotion processes. They need to indulge more into bricolage by getting their hands dirty on the field and while doing so, it is important for them to be politically active at workplace and engage with others to benefit their development efforts. The dissertation also describes an emerging story of new product development in India laced with resource constraints, complex market and economy dynamics, and technology changes.

KEYWORDS

New product development, innovative behavior, bricolage, political skills, hi-tech firms in India