PROJECT RESOURCES AND FIRM EXPERIENCE: A STUDY OF BOLLYWOOD FILM PROJECTS

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ABSTRACT

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The Resource-Based View (RBV) has made a major contribution to the field of strategy over the last thirty years. In spite of its growth in importance, the traditional RBV emphasizes the possession of VRIN resources as a sufficient condition for firms to achieve sustainable competitive advantage. In this dissertation, I show that an increase in the amount of VRIN resources that a firm may deploy could actually lead to diminishing returns. Barney later recognized that besides the mere possession of resources the firm might also play a role in creating an advantage, modifying VRIN to VRIO. However, this still did not clarify the characteristics of the firm that may also enable it to be better organized to draw upon its resources. I therefore focus on the firm's experience and assess the extent to which this may allow it to derive more value from its available resources. I use data from Bollywood, one of the major centers of film production in India. By drawing on this data, I link the box office performance of motion picture projects to project -based resources and to firm-based experience. As such, I investigate the extent to which benefits are embedded in the resources, as opposed to being driven by the application of the firm's experience to extract their value.

To my parents, whose wisdom, faith, and support always encourage me moving forward.

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INTRODUCTION

The Resource-Based View (RBV) has made a major contribution to the evolving field of strategic management during the last thirty years (e.g., Wernerfelt, 1984; Barney, 1991; Peteraf, 1993; Mahoney & Pandian, 1992; Peteraf & Barney, 2003). It has even been claimed that RBV has become one of the most influential theoretical perspectives "in the history of management theorizing" (Kraaijenbrink, Spender, & Groen, 2010, p. 350). It shifted the focus of strategy research back from industry characteristics to firm attributes in explaining sources of economic rents and competitive advantage (Hoskisson, Hitt, Wan, & Yiu, 1999). In particular, this perspective claims that the simple possession of heterogeneous resources can enable the generation of Ricardian rents and quasi-rents (Lavie, 2006; Conner, 1991; Peteraf, 1993; Mahoney & Pandian, 1992).

Barney (1991) parameterized the RBV by arguing that firms can achieve a sustainable competitive advantage (SCA) when their resources meet the criteria of being valuable, rare, inimitable, and without substitutes (VRIN). As such, RBV placed considerable emphasis on the possession of resources that possess these attributes as a sufficient condition for firms to achieve SCA. This also implied that firms could obtain much better performance by drawing upon more of these resources. Although studies have found some evidence of the contribution of VRIN resources, there has been little effort to examine whether the addition of such resources may eventually produce diminishing returns. In other words, firms may not be able to keep benefiting by increasing the amount these resources that they draw upon.

In this dissertation, I argue that firms can enhance the returns they can receive from their VRIN resources by how they decide to use them. The RBV has not explicitly considered this issue. However, it is likely that a firm may derive advantage not only from its access to resources

but also how it decides to deploy these resources. In fact, firms are likely to differ substantially in their ability to extract value from their resources based upon their prior experience with their use. In other words, the manner in which resources are used by different firms reflects their accumulated experiences with prior use of resources.

Prior research has examined several aspects of a firm's prior experience, although much of it has focused on the experience of a firm's managers (Holcomb, Holmes, & Connelly, 2009; Mannor, Shamsie, and Conlon; 2016; Sonenshein, 2014). Furthermore, studies have produced conflicting findings about the influence of managerial or firm experience on the deployment of a firm's resources. Finally, few studies have examined the relative impact of the availability of resources and their use by a firm. In other words, my dissertation explores the extent to which the performance of a firm may be driven by its access to resources or its use of resources.

As such, the traditional RBV view that emphasizes the possession of VRIN resources as a sufficient condition for firms to achieve sustainable competitive advantage has impeded our efforts to gain better insights into the RBV (Kraaijenbrink et al., 2010). This results in a lack of understanding as to how firms can derive maximum possible value from available resources in creating competitive advantage. Although firms can benefit from the amount of VRIN resources that they can deploy, by themselves the advantages that a firm can obtain from these resources will eventually decline. In fact, it has even been argued that "strictly speaking, it is never resources themselves that are 'inputs' into the production process, but only the services that the resources can render, and it is largely in this distinction that we find the sources of the uniqueness of each individual firm" (Penrose, 1959, p. 25).

Specifically, taking the traditional RBV view that merely having possession of VRIN resources can provide a firm with an advantage (Barney, 1991; Wernerfelt, 1984; Peteraf, 1993),

the question arises about the role of the firm. In particular, what aspects of the firm may enhance the firm's ability to better leverage its resources remain unclear. Barney (1995) later recognized that the firm may also play a role in creating an advantage, modifying VRIN to Valuable, Rare, Inimitable, and Organization (VRIO). He stated that "a firm must be organized to exploit the full potential of its resources" (p. 56). However, it still did not clarify the characteristics of the firm that may enable it to be better organized to draw upon its resources.

In other words, if we take Barney's (1991; 1995) assumption that if a firm has VRIN resources then it should have some understanding about how to use them. Following this line of reasoning, the firm will not matter if it has these resources and organizes them properly. As a result, there is still pervasive criticism that this research overly emphasizes inherent value of resources instead of exploring what role the firm plays in using its resources to achieve an advantage and what characteristics of the firm drive that (Kraaijenbrink et al., 2010; Priem & Butler, 2001).

In this dissertation, I aim to contribute to the RBV literature by examining the limitations of simply possessing and deploying VRIN resources. I shift my focus to the role of a firm's experience in obtaining benefits from its resources because this can be important in that it leads to continuous development and refinement of routines to reflect its learning (Nelson & Winter, 1982; Winter, 1995; March, 2010). I argue that firms can draw on certain types of experience to better understand the value of various resources and how to enhance this value by figuring out how to use them. As the firm is continually bundling and reconfiguring its resource base, it accumulates experiences with managing different resources and gradually refines its mechanisms of using various resources (Eisenhardt & Martin, 2000; Shamsie, Martin, & Miller, 2009).

By bringing in firm experience, I can examine whether or not a firm's experience can allow it to make better use of its VRIN resources while also gaining a better understanding of how resources can provide a firm with an advantage. Specifically, in exploring different kinds of prior experience, I can further examine how the benefits to be obtained from VRIN resources can be enhanced by leveraging the firm's experience. This can lead to a better understanding of how a firm can draw upon past experience to generate better performance from its resources. Moreover, it builds on recent work that increasingly emphasizes extracting value from managing available resources (Holcomb, Holmes, & Connelly, 2009; Sirmon, Hitt & Ireland, 2007; Sirmon et al., 2011).

Consequently, in this dissertation, I explore the different ways a firm can obtain benefits from its resources. Specifically, I examine how the firm's access to resources influences performance, how its prior experience influences performance, and how the experience of the firm enhances its ability to leverage value from its resources. I empirically test, separately and jointly, the relative contribution of each of these on the performance of projects in the Bollywood movie industry between 1997 and 2016. This dissertation is organized as follows. First, I make distinctions between different ways in which a firm can derive value from its resources. Next, I develop theoretical arguments regarding how the firm's prior experience influences the value it may be able to obtain from its resources. As such, I investigate the extent to which benefits are embedded in the resources as opposed to relying on the firm to derive value from using them. Then, I develop hypotheses within the context of the Bollywood movie industry. In what follows, I outline the methodology used for testing my hypotheses as well as the findings from my analyses. I finish by discussing some of the limitations in this study and sharing my concluding thoughts on future directions.

THEORY

The basis by which a firm pursues and sustains a competitive advantage has been one of the central themes in strategy research. Whereas the Industrial-Organizational (IO) view with Bain (1956, 1964) and Porter (1980, 1985) focuses on the competitive environment of firms as determinants of performance of firms, the RBV complements this perspective by bringing scholarly attention back to firm attributes in explaining sources of economic rents and competitive advantage (Kraaijenbrink et al., 2010; Hoskisson et al., 1999; Mahoney & Pandian, 1992; Miller & Shamsie, 1996). Specifically, the RBV emphasizes the heterogeneity of resources that firms have acquired and developed, relative to each other, as the internal sources of different performance outcomes. The central proposition is that in order to achieve Sustainable Competitive Advantage (SCA), a firm must own or control valuable, rare, inimitable, and nonsubstitutable resources and to apply them to a desirable end (Barney, 1991; 2002; Wernerfelt, 1984).

In spite of criticism (Priem & Butler, 2001; Foss & Knudsen, 2003; Kraaijenbrink et al., 2010; Arend, 2006), RBV research has drawn considerable attention over the years. Management scholars have devoted considerable effort in their theoretical work as well as in their empirical research on the development of the RBV (e.g. Barney, 2001b; Peteraf, 1993; Peteraf & Barney, 2003; Mahoney & Pandian, 1992; Lavie, 2006; Crook, Ketchen, Combs, & Todd, 2008; Miller & Shamsie, 1996; Holcomb et al., 2009; Mehra, 1996; King & Zeithaml, 2001). Despite their collective efforts, however, the answers to certain critical questions have remained unclear. To what extent can a firm increase its performance by simply increasing the amount of VRIN resources that it can access and deploy? Furthermore, can firms reply upon their previous experience with such resources to extract more value from them? In other words, how much

contribution is made by the resources themselves as opposed to the way they are used by a firm? In the following sections, I will briefly review the literature and then explicate how these issues can be addressed.

The Role of Resource Access

It has been acknowledged by some researchers *(*Kraaijenbrink et al., 2010; Kor & Mahoney, 2000, 2004; Pitelis, 2004; Lavie, 2006) that the modern RBV has its roots in the earlier contribution of Penrose's (1959) classic *The Theory of the Growth of the Firm.* Conceptualizing firms as heterogeneous entities consisting of firm-specific resource bundles, Penrose (1959) pointed out the basis by which firms could better pursue market opportunities and create economic value through effective use of idiosyncratic resources. In doing so, she highlighted how the resources that a firm may draw upon could provide it with a competitive advantage.

Building on Penrose's classic work, Wernerfelt (1984) and Rumelt (1984) advanced the RBV research by further articulating the importance of resource-position barriers and isolating mechanisms in securing and sustaining economic rents. The notion of a resource-position barrier is an analogue of an entry barrier and may indicate the potential for high returns (Wernerfelt, 1984). Specifically, the heterogeneous resource bases of firms provide them with access to different market opportunities and growth, and a firm is able to exploit opportunities better and maintain its competitive position over peers by leveraging resource-position barriers and isolating mechanisms.

Extending the idea that resource-position barriers and isolating mechanisms enable a firm to sustain economic rents by protecting it from imitation and substitution, Barney (1991) developed this research into a theory of SCA. Barney (1991) proposed four characteristics of

resources essential for gaining SCA: valuable, rare, inimitable, and nonsubstitutable. Similar to the earlier formulations of this perspective, Barney (1991) stresses that value is derived from using resources to exploit opportunities that are tied to the firm. As Barney (1991) stated, "the possession of resources enables the firm to conceive and implement strategies that improve its efficiency and effectiveness" (p. 101). As such, Barney's (1991) reformulation of the RBV placed considerable emphasis on the attributes of resources themselves.

Collectively, these developments in the RBV has been insightful by shedding light on how resources enable the focal firm to exploit various market opportunities (Wernerfelt, 1984; Penrose, 1959) and to continuously reap benefits from these resources to more efficiently satisfying customers' desires (Barney, 1991; Peteraf, 1993). To this point, Peteraf and Barney (2003) reiterated that "In resource-based theory, competitive advantage derives from firm-specific resources that are scarce (unique) and superior in use, relative to others… Superior resources are more 'efficient' in the sense that they enable a firm to produce more economically and/or better satisfy customer wants" (p. 311). Thus, it was argued that the possession of heterogeneous resources could enable the generation of Ricardian rents (Peteraf, 1993; Conner, 1991; Mahoney & Pandian, 1992; Lavie, 2006).

Furthermore, the formalization of the RBV has provided strategy scholars with important parameters for subsequent theorizing and empirical testing. The empirical findings to date mostly support the notion that differences in resources can explain inter-firm performance differences (e.g., King & Zeithaml, 2001; Miller & Shamsie, 1996; Mehra, 1996; Newbert, 2008; Holcomb et al. 2009; Huesch, 2013; Gruber, Heinemann, Brettel, & Hungeling, 2010). In particular, Crook and colleagues (2008) reviewed research in this vein and found that resources are positively

related to firm performance and they found more support when resources, more clearly conformed to the RBV framework, are valuable, rare, inimitable and difficult to substitute.

Barney's (1991) conceptualization, however, emphasized complete control over resources suggesting that resources must be owned by the firm[1]. This is reflected in the underlying assumption in the RBV research that resources are immobile. Specifically, the RBV tradition tying resource heterogeneity with SCA builds on the assumptions that resources are lacking mobility (Peteraf, 1993) because of isolating mechanisms (Rumelt, 1984) and resource position barriers (Wernerfelt, 1984). What if resources are not immobile or not completely owned by the firm? What would be the critical factors driving performance then? To put it differently, if a firm constantly draws on resources that were only made available for specific uses, can it still achieve SCA?

In this dissertation, I draw from Penrose's (1959) original arguments that conceptualize resources as *available* assets to the firm, independent of the ways in which they were used. This conceptualization emphasizes the availability and accessibility of resources. In other words, resources are not necessarily owned or completely controlled by the firm in order to perform organizational tasks. In contrast, resources can be contracted from external sources for specific use by the focal firm. In fact, Penrose (1959) noted that it is the services that resources can render that allows a firm to pursue opportunities.

Building on this argument, recent research has argued that focusing only on resources that are owned by the firm undermines the essential contribution of mobile resources in today's interconnected business environment (Lavie, 2006). For instance, Huesch (2013) finds that many cardiac surgeons work across multiple hospitals in a county, in light of heightened demand for

[1] Somewhat differently, Wernerfelt (1984, p. 172) defines resources as those "tangible and intangible assets, which are tied *semi-permanently* to the firm".

surgical programs in recent years. As work on RBV has progressed, scholars have started to lessen the emphasis on ownership of resources such that having *access* to resources on a semi-permanent basis may simply suffice (Helfat & Peteraf, 2003). As such, I follow this extended view of resources that emphasizes the accessibility of resources that gives the firm rights to utilize and deploy resources across firm boundaries.

Furthermore, the traditional RBV view that emphasizes the possession of VRIN resources as a sufficient condition for firms to achieve sustainable competitive advantage also implies that firms can continue to improve performance by adding more of these resources. However, it is questionable the extent to which firms can keep benefiting from an increasing amount of VRIN resources that it has access to. The previous argument builds on the assumption that these resources can always produce positive returns to the focal firm by enabling the firm to produce more economically and to more efficiently satisfy customers' demands (Peteraf & Barney, 2003; Barney, 1991). What if adding more of these resources can no longer help to address customers' desires in the most efficient manner? Could the focal firm still derive benefits from adding more of these resources? In this dissertation, I challenge one of the commonly held assumptions in the RBV literature that having greater access to more VRIN resources can always enable the focal firm to improve performance.

Although not explicitly specified in their theorizing, many RBV theorists have either acknowledged or implicitly implied that more of these VRIN resources are likely to be better for firm performance. For instance, Penrose (1959) highlights the importance of various resources and suggests that higher level of these can help the firm to overcome growth barriers. Similarly, Wernerfelt (1984) states that "getting more of those resources you already have" can be an effective strategy to improve firm performance based on the RBV logic (p. 175). Furthermore,

Barney (1991) argues that when a firm is able to accumulate more resources than its industry peers this can help it to gain a competitive advantage. Alternatively, as Peteraf and Barney (2003) reiterated, "competitive advantage is the result of having more valuable resources than other firms in an industry where there is a heterogeneous distribution of resources" (p. 317). Similarly, Mishina, Pollock, and Porac (2004) summarized that "prior research has implicitly assumed that more resources are usually better than fewer resources in promoting firm expansion" (p. 1180).

Nonetheless, the argument of benefiting from economic efficiency through the use of more VRIN resources seems inherently paradoxical. As a focal firm continues to allocate more resources to its project, the possibility of the marginal benefits to be deduced from additional resources may decrease due to the economic efficiency of prior resources allocated to the project. Similarly, consumers may become less tuned to additional improvements in the underlying products as the focal firm continue to escalate resources in refining the products. In other words, the economic efficiency and potential benefits to be derived from such additional resources decline as the amount of these resources increases. As such, I argue that there are limits to the benefits that can be derived from simply adding more of these resources.

In other words, it is possible that adding more VRIN resources could potentially yield declining returns at some point. Although prior literature in the RBV has shown some evidence that VRIN resources could contribute to firm performance, few studies have examined whether the addition of such resources may eventually lead to diminishing returns. Pierce and Aguinis (2013) describe such a phenomenon as the *Too-Much-of-a-Good-Thing* (TMGT) effect when beneficial antecedents cease to have additional positive impacts on the outcomes after inflection

points. Further, reaching beyond inflection points will produce suboptimal results due to waste or worsened outcomes.

Moreover, the assertion that adding more VRIN resources, by themselves, can enable the focal firm to derive more value from its access to more resources assumes that if a firm has VRIN resources then it should have some understanding about how to use them (Barney, 1991; 1995). As such, the role of the firm in extracting value from its resources is neglected. However, a firm plays a significant role in utilizing resources to obtain an advantage given its access to resources (Kraaijenbrink et al., 2010). The efficiencies and effectiveness of firm-specific processes through which resources are used to perform various organizational tasks have critical implications for firm performance. Certain firm attributes could set the binding constraint to its growth despite an increasingly larger pool of resources that it has access to (Penrose, 1959). Specifically, scholars argue that important firm attribute such as its prior experience can be leveraged upon in utilizing its resources to create value (Winter, 1995; Kor & Mahoney, 2004). In what follows, I elaborate upon the role of prior experience of a firm in extracting value from resources.

The Role of Prior Experience in Extracting Value from Resources

While resources of the focal firm contribute to the heterogeneity that may have rent-generating potential, the manner in which a firm may have learned to use them can also play a significant role (Collis, 1994; Amit & Schoemaker, 1993; Kor & Mahoney, 2005). In this regard, scholars argue the prior experience of a firm with the effective use of resources can also be an important source of heterogeneity that may also lead to sustained competitive advantage (Winter, 1995; Huesch, 2013; Kor, Mahoney, & Michael., 2007). Whereas resources are usually tied to Ricardian rents due to their value and scarcity, quasi-rents are contingent upon the best possible

use of these resources within the firm (Klein, Crawford, & Alchian, 1978; Ethiraj, Kale, Krishnan, & Singh, 2005; Mahoney & Pandian, 1992). Specifically, having more prior experience might influence the firm's ability to extract value from available resources (Cuypers, Cuypers, & Martin, 2017; Taylor & Greve, 2006). This is because learning can arise from the accumulated experience and creates a growing stock of knowledge that can be reflected in its ongoing resource use. It occurs as the firm encodes experience into routines that guide its future behaviors (Levitt & March, 1988; March, 2010).

The notion of extracting value from resources is also rooted in Penrose's (1959) original thesis in which she states that resources are closely tied to a bundle of potential services that provides differential value to firms. In other words, even if resources were available to all firms, the extent to which a firm can extract value from these resources would not be the same. This is because the same sets of resources may be combined in different ways, applied for different purposes, or used in different fashions which underscore firms' path-dependent processes of using these resources (Penrose, 1959).

Nelson and Winter (1982) further reiterated this path-dependency nature of using resources that is tied closely to the firm's prior experience. They proposed that a firm's behaviors and outcomes reflect a collection of firm-specific routines that are derived from the past experiences of the firm (Mahoney, 2004, p. 186). Because firms can vary in the accumulation of their experience with the use of resources, these can be difficult to imitate and therefore can be a crucial source of performance differences among firms (Barney, 1991; Dosi, Nelson, & Winter, 2001). As such, scholars have shown that differences in the prior experience of firms in making use of various types of resources can lead to differences in their performance (e.g. Huesch, 2013;

Kor & Mahoney, 2005; Yeoh & Roth, 1999; Moliterno & Wiersma, 2007; Danneels, 2002; Gruber et al., 2010; Lampel & Shamsie, 2003).

Nonetheless, there appears to be a lack of consensus regarding the extent to which resources, by themselves, influence firm performance (Armstrong & Shimizu, 2007). For instance, in his review of the empirical research in RBV, Newbert (2007) found that a firm's prior experiences with the effective use of its resources seem to contribute to the firm's competitive advantage to a far greater extent than do resources themselves and suggests this may be due to different theoretical approaches conceptualizing resources.

Similarly, there are different viewpoints regarding the degree to which prior experience of a firm might contribute to its performance. Specifically, whereas some studies suggest that firms may gain an advantage from their accumulated prior experience (e.g., Egelman, Epple, Argote, & Fuchs, 2016; Fong-Boh, Slaughter, & Espinosa, 2007; Kor et al., 2007), others have argued that sometimes experience may backfire and that it hinders creativity and could lead to undesirable performance (Taylor & Greve, 2006; Lawrence, 2018; Haas & Hansen, 2005). This reflects some critical issues that have continued to confound strategy scholars. To what extent can the performance of a firm be merely explained by the inherent characteristics of resources themselves? Moreover, when could prior experience of a firm enhance its ability to better leverage its resources?

Taking a slightly different tone, Winter (1995) argued that despite the importance of resources, resources themselves are insufficient contributors to achieving competitive advantage if there is a lack of necessary routines based on prior experience of coordinating and deploying resources. Despite the attributed importance of access to resources and the firm's accumulated experience with using resources, there have been few studies that have untangled the different

ways that a firm obtains benefits from its resources. This makes it difficult to ascertain the precise role of either resources or their use on firm performance. It also results in a lack of understanding of how resources can be better leveraged to achieve organizational goals on the basis of a firm's prior experience. This omission is glaring given that firms' accumulated experience is assumed to allow firms to generate the maximum possible value from their resources.

Furthermore, it was pointed out that a firm's capacity to obtain value from available resources reflects the development of routines that are tied to its accumulated experience which determine its idiosyncratic way of using resources (Nelson & Winter, 1982; Levitt & March, 1988; Winter, 1995; March, 2010). Notwithstanding these helpful insights in conceptually distinguishing between a firm's access to resources and its idiosyncratic use of resources based on prior experience, few empirical studies have examined the relative impact of each of these on performance. Instead, most studies in this vein have continually lumped the availability of resources with their use (Newbert, 2008; 2007; Armstrong & Shimizu, 2007; Lavie, 2006; Peteraf & Barney, 2003).

Indeed, making the distinction between access to resources and the use of resources represents a challenging endeavor given the conceptual interrelatedness of the two constructs. On the one hand, firms draw on their prior knowledge about how to use resources effectively to obtain more value from resources (Kor & Mahoney, 2004). Firms use resources on the basis of the emergence of routines that are derived from their past experiences (Nelson & Winter, 1982). On the other hand, the resource base of a firm co-evolve with its accumulated experience with managing different kinds of resources as the firm continually develops, integrates, and reconfigures its resource base (Eisenhardt & Martin, 2000).

Empirically, it is even more difficult to separate the contribution of resource access from their use on a firm's performance. The identification and measurement of different types of resources and distinct mechanisms through which resources are used bring additional complexity to this undertaking (Armstrong & Shimizu, 2007). However, as argued earlier, it is critical to explore the different ways that a firm can obtain value from its resources by distinguishing between its access to resources and its use of resources to achieve a better understanding of their relative roles in explaining economic rents and competitive advantage.

In other words, the value that a firm can draw from its resources is based on the firm's accumulated experience with their use in various activities. Specifically, firms gradually accumulate experience and gain knowledge over time from ongoing tasks about how to make proper use of available resources (Mahoney, 2004; Nelson & Winter, 1982; Nag & Giola, 2012). Drawing from their accumulated experiences, firms manage and deploy resources to perform various functions (Shamsie & Mannor, 2013; Sirmon et al., 2011; Peteraf & Barney, 2003). As such, it transforms resources as raw inputs into desirable outcomes in distinct markets and to execute various organizational tasks following the firm's experience-based processes. As Argote and Miron-Spektor (2011, p. 1124) noted, "experience is what transpires in the organizations as it performs various tasks" that it roots in the firm's past and unfolds in the way that shapes the firm's future. Furthermore, a firm can rely on its prior experience with the effective use of various resources in managing all available resource stocks. For instance, contracted resources can also be used for generating economic value as long as the focal firm can effectively leverage such resources drawing from the firm's past experience.

I apply this distinction between the value that is derived from resources and the value that stems from the firm's accumulated experience. Making this distinction can be most effectively

accomplished within a project-based industry where specific resources have been assigned to each particular project and the firm's prior experience about how to use the resources can be deduced. In other words, we can separately identify and more accurately capture the different roles of distinct project-based resources and firm-based experience in a project setting.

Using Resources and Leveraging Experience in Project-based Industries

In a project-based industry, such as motion picture, video games, television, music production, and architecture, a certain line-up of specific resources are usually assigned explicitly to complete a particular project (Shamsie et al., 2009; Garzon-Vico, Gibbons, McNamara, & Rosier, 2016; Ethiraj et al., 2005). In addition, the resources assigned to any individual project may not necessarily come from within the firm. For example, the production budget assigned to a given project may come from various funding sources. The key productive individuals assigned to a project may come entirely from outside the firm such as the members of a research team that have been recruited specifically to carry out a particular project.

In fact, resources that are contracted or arranged from outside sources play more and more important roles across different industries (Huesch, 2013; Lorenzen & Frederiksen, 2005; Miller & Shamsie, 1996; Aime, Johnson, Ridge, & Hill, 2010). Thus, a project-based setting can more fully capture the availability of various resources by building upon the recent development of RBV research that has been recognizing the roles of resources that may not be permanently attached to the firm (Lavie, 2006; Aime et al., 2010; Fang, Wade, Delios, & Beamish, 2007; Peteraf & Barney, 2003).

Specifically, I focus on three kinds of resources, financial resources, human resources, and partner resources, that have been argued to play critical roles in project-based industries (Lorenzen & Frederiksen, 2005; Shamsie et al., 2009; Vandaie & Zaheer, 2014). In particular, a

firm needs to secure financial resources that determine the amount of funds that can be allocated to its projects. In addition, a firm should also assign human resources that include specific types of talents to perform various tasks associated with its projects. Moreover, a firm may develop various partnerships that it can leverage on a given project.

Whereas resources assigned to a specific project may be drawn from outside of a firm in a project-based setting, firms can leverage their own prior experience on different projects to effect desirable outcomes. This is consistent with the notion that resources from external sources also have the potential to create value if the focal firm can draw on its own experience to deploy and transform these resources to exploit opportunities. In fact, firms gradually gain experience from a range of activities and draw from such accumulated experience to improve their future actions (Choi & McNamara, 2017; Acquaah, 2012; Shamsie & Mannor, 2013).

Because it is possible to identify the various resources that are assigned to any given project, we can then explore how these different resources influence the performance of those projects. We can also examine the role of prior experience of a firm on its project performance. In other words, the manner in which a firm's access to resources and its prior experience with various product markets contribute to performance can be assessed relative to each other in project-based industries. It also allows us to further examine the firm's ability to leverage the value of its resources enhanced by its prior experience.

For the most part, a firm's accumulated experience can guide the processes through which different resources are used in various projects to deliver desirable outputs (Nerkar & Roberts, 2004; Yeoh & Roth, 1999; Mahoney & Pandian, 1992; Penrose, 1959). Firms gradually accumulate knowledge through learning by doing in performing various projects and embedding acquired knowledge about how to use different resources in firm-specific, path-dependent

routines (Nelson & Winter, 1982)[2]. Drawing from its accumulated experience, firm-specific routines coevolve over time with revised practices and improved production processes in pursuing various goals set forth in different projects (Clark, Kuppuswamy, & Staats, 2018). Because firms vary significantly in their accumulation of prior experience, this is an important source of inter-firm heterogeneity that can lead to different levels of performance in various projects (Barney, 1991; Winter, 1995; Haunschild & Sullivan, 2002; Yeoh & Roth, 1999). In other words, a firm's prior experience may condition the value of resources assigned to particular projects (Huesch, 2013). This is because the extent to which resources can generate value is contingent upon effective use of resources based on different kinds of a firm's experience with transforming inputs to outputs in different types of projects.

Furthermore, scholars have argued that experience is not only firm-specific but also context-specific (Nelson & Winter, 1982; Argote & Miron-Spektor, 2011). Thus, it is important to explore the different kinds of experience in different contexts in order to better understand their relative roles in contributing to firm performance (Argote, McEvily, & Reagans, 2003; Clark et al., 2018; Lawrence, 2018). In fact, research has shown that different kinds of firm experience lead to different learning outcomes and may have different impacts on firm performance (Fong-Boh et al., 2007; Haunschild & Sullivan, 2003; Eggers, 2012; Ingram & Baum, 1997).

Specifically, I distinguish between two kinds of firm-based experience, broadly-defined experience and narrowly-defined experience, in this setting. In project-based industries, a firm gradually gains broadly-defined experience with managing all kinds of projects. For instance, an

[2]. In addition to the largely tacit accumulation of knowledge embedded in learning by doing in each context, firms also make deliberate efforts in refining their routines and practices to improve their resource deployment (Zollo & Winter, 2002), such as an IT firm can make persistent investments in infrastructure to improve its ability of managing multiple projects (Ethiraj et al., 2005).

architecture firm gains broadly-defined experience with designing different styles of structures such as residential building, office building, shopping malls, or sports stadiums. Accumulating broadly-defined experience with managing projects of all kinds triggers generalized learning which creates a broader knowledge base of the firm (Haunschild & Sullivan, 2003; Huber, 1991). Leveraging such broadly-defined experience with managing different kinds of projects, firms become aware of the potential benefits in each of these resources, learn to better use them under different situations, and deploy them in the best possible ways to extract value in different contexts (Mannor, Shamsie, & Conlon, 2016; Egelman et al., 2016; Ethiraj et al., 2005; Holcomb et al., 2009). This may further contribute to project performance than do the inherent characteristics of those resources. In other words, broadly-defined experience with managing projects of different kinds can enhance the firm's ability to derive value from resources assigned to its projects.

Whereas broadly-define experience describes the level of experience of the firm across different domains, narrowly-defined experience reflects a firm's specific experience with managing projects of a certain kind. For instance, we can look at Pixar, an American film studio that focuses on producing animation films and accumulates such narrowly-defined experience with managing animation film projects. Furthermore, narrowly-defined experience typically reflects deliberate choices a firm makes that are involved with specific purposes to address opportunities within a certain market (Eggers, 2012). It gives the firm more opportunities to develop specialized learning and expertise (Narayanan, Balasubramanian, & Swaminathan, 2009). However, having more narrowly-defined experience might only help to a certain extent because repeating similar projects will limit the opportunity that the firm can learn from performing different tasks (Staats & Gino, 2012). It may also constrain the firm's capacity to

search for more innovative use of resources assigned to its project (Schilling, Vidal, Ployhart, & Marangoni, 2003; Abernathy & Wayne, 1974). Stated differently, narrowly-defined experience with managing projects within a narrow range may undermine the potential of the firm to derive value from resources assigned to its projects.

To summarize, the different ways that a firm can obtain value from its resources are conceptually clear and can be assessed, relative to each other, empirically in project-based industries. The access to VRIN resources of a firm and its accumulated experience of different kinds can both influence performance. Unpacking the mechanisms through which they create value can allow us to achieve a better understanding of the specific contribution of each of these to the overall performance of each individual project. I propose that access to VRIN resources may be able to contribute to firm performance, but these additional resources may produce diminishing returns. Instead, a firm may be able to draw on its prior experience defined broadly or narrowly on the basis of genres of the previous films to enhance the value that it obtains from available resources. In the next section, I will develop these ideas within the context of the motion picture industry.

ASSESSING THE CONTRIBUTION OF RESOURCES AND EXPERIENCE

This dissertation looks at motion picture projects and identifies three key resources that are attached to these projects – namely production budgets, top stars, and production partners. I begin with an assessment of the relative contribution of each of these resources on the performance of film projects. Next, I examine the effect of a studio's broadly-defined experience on performance of its film projects and the role of broadly-defined experience on the relationship between various resources and overall performance of films. Finally, I explore the role of a studio's narrowly-defined experience and its impact on the relationship between project resources and film performance.

Effect of Resources on Performance of Motion Picture Projects

Production Budget

The size of production budget is the first critical consideration of resources assigned to any particular film project. It has long been argued that the production budget assigned to a film project is one of the most important factors for its box office performance (Litman, 1983; Litman & Ahn, 1998; Elberse & Eliashberg, 2003; Perren & Schatz, 2004). Despite certain evidences suggesting that big budgets are not necessarily correlated with greater financial returns (e.g. Ravid, 1999; John, Ravid, & Sunder, 2002), the average production budget for a Bollywood film has continually been on the rise. Between 2000 and 2014 the average budget of a Bollywood motion picture has risen from a little above 3 crore (approximately 420,000 USD) [3] to well over 25 crore (approximately 3.5 million USD). In 2014 alone, high budgeted films included *Happy New Year* costing 150 crore (approximately 21 million USD), *PK* costing 120 crore

[3] 1 crore = 10, 000, 000 rupee; or approximately 140,000 USD based on the exchange rate as of 4/29/2019

(approximately 17 million USD) and *Singham Returns* costing 110 crore (approximately 15.5 million USD).

Although the production budget of a film can be tied to the use of expensive actors and actresses, Basuroy, Chatterjee, and Ravid (2003) convincingly argued that the influence of production budgets on project performance should be disentangled from the effects of stars because the two have different mechanisms affecting moviegoers[4] (I elaborate upon these two mechanism in sections that follow). Higher production budgets can allow the studio to expand on the various elements that it can incorporate into its films in order to attract more audiences and increase box office performance.

Specifically, scholars of motion picture economics argued that bigger budgets could increase a film's entertainment value (Litman & Ahn, 1998), indicating higher technical quality and thus may lead to greater box office popularity (Litman, 1983). Basuroy and colleagues (2003) further contend that assigning bigger budgets to film projects can serve as an insurance policy by applying special techniques to attract audiences since studios find it hard to predict the market trend. More specifically, the bigger production budget assigned to a film project also helps the project more effectively satisfy moviegoers' demand for entertainment by showing exotic on location scenes, magnificent sets and costumes, and dazzling visual effects.

However, I argue that such added benefits associated with assigning bigger budgets are likely to yield diminishing marginal returns. As the studio keeps spending more and more in production by building in more actions, shooting at more locations, and adding more special effects, moviegoers become less able to detect additional improvements in the picture quality or might not even notice any marginal changes. The RBV suggests that resources could provide a

[4] Basuroy and colleagues (2003) found minimal correlation between the production budget and the presence of stars.

firm with an advantage as long as they can enable the firm to satisfy customers' desires more effectively (Peteraf & Barney, 2003). If the customers do not even notice the changes in entertainment value, the benefits that a firm can derive from increases in the production budget of a film are likely to show diminishing returns. As such, I predict the following:

Hypothesis 1a: Increases in the production budget will lead to diminishing marginal returns in box office revenue.

Furthermore, I argue that an increase in the size of the production budget assigned to films projects will eventually yield negative returns in terms of box office performance of these films. Specifically, excessive production budgets assigned to film projects may lead to inappropriate use of the funds. In other words, an excessive amount of financial resources might potentially lead to managerial opportunism. Specifically, agency theorists argue that excessive financial resources can lead to self-serving and value-destroying behaviors of the managers (Jensen & Meckling, 1976). As such, keep increasing production budget not only yields inefficient use of financial resources but could also lead to inappropriate application of financial resources that might actually make the film less appealing to potential audiences.

More specifically, assigning too much production budget to a film could reduce the overall consumption experience of moviegoers from watching the film that it confuses viewers from following the plot and storyline of the film. Specifically, spending on extravagant settings and shooting across too many different locations could distract the attention of viewers. In other words, adding too many features and special effects to a film could potentially overwhelm moviegoers. In fact, scholars noted that an excessive amount of information could turn consumers away (Malhotra, 1982; 1984; Lee & Lee, 2004).

Finally, excessive spending in film production by the studio in shooting across different locations and featuring more special effects will incur additional complexity of these projects and thus make it more challenging to manage these projects. Specifically, spending on extravagant settings and shooting on-location sets require coordination among various specialists. In fact, recent research in project management has shown that greater complexity of projects will lead to more delays and worse performance of projects (Cicmil, Cooke-Davies, Crawford, & Richardson, 2009; Tatikonda & Rosenthal, 2000; Bjorvatn & Wald, 2018). As such, I predict the following:

Hypothesis 1b: Increases in the production budget will eventually lead to negative returns in box office revenue such that there is an inverted-U shaped relationship.

Top Stars

The role of popular stars on the performance of a film has attracted a great deal of scholarly attention in motion picture research (e.g. Litman & Kohl, 1989; Wallace, Seigerman, & Holbrook, 1993; Desai & Basuroy, 2005). In Bollywood, top stars such as Ashkay Kumar, Shahrukh Khan and Salman Khan have been dominant for a few decades. Nonetheless, there appear to be conflicting viewpoints about the influence of stars on film performance since scholars have long debated on whether or not studios should hire top stars (Litman, 1983; Sochay, 1994; Levin, Levin, & Heath, 1997; Elberse, 2007; Liu, Mazumdar, & Li, 2014). On the one hand, some empirical evidences suggest that the presence of stars in a film does not necessarily guarantee greater financial returns (Litman, 1983; De Vany & Walls, 1999; Litman & Ahn, 1998; Ravid, 1999).

On the other hand, other scholars argue that the presence of stars in a film have significant impact on that film's box revenue and public attendance (Litman & Kohl, 1989; De

Silva, 1998). In particular, Wallace and colleagues (1993) noted that "certain movie stars do make demonstrable differences to the market success of the films in which they appear" (p. 23). Top stars have widely recognized acting talent that are critical inputs to filmmaking (Elberse, 2007; Sochay, 1994). In addition, they also bring additional appeal to a broader fan base at the box office. Levin and colleagues (1997) showed in an experiment that popular stars provided moviegoers with a decision heuristic for choosing whether or not to watch a film before considering other information. Albert (1998) further contended that stars were important not only because they could bring additional appeal to the fans, but also because their presence may signal potential audiences to categorize the film as having better quality drawing from previous experiences.

Although featuring top stars in a film project may enhance the public appeal of the film at the box office, the marginal benefit associated with featuring additional stars in a film is likely to diminish. In fact, some of the top stars are likely to have overlapping bases of fans. Thus, adding more top stars does not add much more additional box office appeal. In other words, adding more top stars does not produce proportionally more signals to the film to attract more potential audience. Moviegoers may have collected enough information with respect to top stars featured in the film upon making a decision whether or not to watch the film. Gonzalez and Madhavan (2011) showed in an experiment that individuals are less likely to pay attention to additional stimuli that are similar to what they have observed simultaneously. Therefore, the added benefits are likely to diminish with additional increase in top stars. As such, I predict the following:

Hypothesis 2a: Increases in the number of top stars will lead to diminishing marginal returns in box office revenue.

Furthermore, I argue that the increase in the number of top stars in a film may eventually lead to negative returns in box office revenue. Specifically, having too many stars in a film project creates additional difficulty for the studio to manage the process of filmmaking effectively. For instance, the increase in the number of top stars in a film project leads to more coordination and communication issues between the stars and various specialist units such as wardrobe consultant, make-up artist, stunts specialists, on the project. This makes it more difficult for the studio to manage and execute a film project with an increase in top stars.

In addition, each of the top stars may have personal preferences in approaching the film such as how they would like to be filmed and portrayed and how they would desire a story-ending based on their own characteristics. Their preferences or personal characteristics, however, might not fit their roles in the film. Nevertheless, as Defillippi and Arthur (1998) observed, top stars could have a fragile ego that makes it more difficult for the studio to address various priorities in filmmaking. Therefore, having too many top stars creates more challenges to the studio to weld all the creative inputs that can lead to a final product that will perform more poorly at the box office.

Furthermore, unnecessary (and often costly) issues can also arise, as more and more top stars assigned to a film, in the creative process of filmmaking in terms of social dynamics among the top stars. Scholars have highlighted the importance of social integration and communication among key individuals for group decision-making (Smith et al., 1994) and collaborative creativity and team innovation (Bissola & Imperatori, 2011; Paulus, Dzindolet, & Kohn, 2012). However, interpersonal conflicts and negative emotions could arise among top stars that stem from status competition due to the pervasive and self-reinforcing nature of the status of the stars (Magee & Galinsky, 2008). This implies what Bendersky and Hays (2012) describe as the status

conflicts in groups that could negatively affect task group performance. Taken together, I predict the following:

Hypothesis 2b: Increases in the number of top stars will eventually lead to negative returns in box office revenue such that there is an inverted-U shaped relationship.

Production Partners

In the motion picture industry, studios often partner up with others to jointly work on a film project. Bollywood production firms such as Rohit Shetty Productions or Sarawati Entertainment have mainly worked with larger studios such as Yash Raj Productions. The collaborative arrangements enable studios to pursue additional market opportunities that are typically outside of their individual realms. This is because such collaborative arrangements can help studios to gain quicker and less costly access to resources needed to execute a particular film project. The interfirm partnership can serve as an effective means for mobilizing resources that are traditionally immobile (Lavie, 2006). For example, the various types of production resources that are used in making different kinds of films are accumulated over time and difficult to acquire instantaneously. Specifically, collaboration with other studios can allow a studio to do more in a film by leveraging its partners expertise. In particular, the use of partners can allow a studio to more efficiently manage the production processes by avoiding costly delays and minimizing takes and re-shoots. Enlisting partner firms can also allow the studio to exploit complementarities when there are mutual benefits to join forces (Rothaermel, 2001). For example, a studio may decide to draw upon its partner as a resource to draw on its specialized knowledge in making certain types of films.

Although enlisting a partner may enable the focal studio to add more appealing attributes to the film that it could not offer on its own, adding more and more partners does not continue to

help to improve box office revenue of the film. This is because adding more production partners does not provide the studio with proportionally more opportunities to add more features to increase the entertainment value of its film. In addition, adding more and more production partners on a film may lead to problems with ensuring efficient communication and coordination among the multiple partners. This may reduce some of the added benefits associated with enlisting more partners in a film project.

Taken together, adding more production partners in a film can enable the studio to do more in a film by using partners' expertise to enhance the entertainment value of the film. However, such added benefits are likely to diminish with the addition of more partners. Thus, I predict the following:

Hypothesis 3a: Increases in the number of production partners will lead to diminishing marginal returns in box office revenue.

As argued earlier, the marginal benefits associated with adding more production partners in a film is likely to diminish with the increase in the number of partners. I further contend that the increase in the number of production partners may eventually lead to negative returns in box office revenue. In other words, while enlisting one or two partners in a film may allow a studio to do more in a film by leveraging its partners' expertise, having too many partners in a film might actually hurt the performance of the film.

Specifically, adding more and more production partners incurs additional costs and entails more coordination and communication work among production partners. Effective coordination among partners is critical for the performance of inter-firm collaboration ventures (Gulati, Wohlgezogen, & Zhelyakov, 2012; Gulati & Singh, 1998). However, as the film project gets increasingly more complicated with the addition of other partners, coordination issues could

further arise and make it even more difficult for the focal firm to navigate the production process of filmmaking. In other words, the additional costs of managing a large number of partners could outweigh the potential benefits to be obtained from adding more partners. Thus, adding too many partners can lead to weaker performance of the film at the box office.

In addition, as Gulati and colleagues (2012) noted, cultural differences among multiple partners could further exacerbate coordination failures. Similarly, conflicts that stem from different existing structures and processes of each partner might present additional obstacles for the focal firm to collaborate with partners. In fact, different partners may approach the underlying project very differently and have distinct procedures in collaboration following their firm-specific, path-dependent routines (Nelson & Winter, 1982; Ethiraj et al., 2005). The clashes with procedures and routines might hurt the performance of the project even further. Moreover, Das and Teng (2002) further contend that free-riding and opportunistic behaviors are more likely to emerge when there are multiple partners involved in a collaborative venture, thus undermines the likelihood of venture success.

Taken together, I argue that having too many partners in a film project not only reduces the potential benefits to be obtained from collaboration, it might even hurt the performance of the project due to increased coordination costs, cultural differences, conflicted routines, and free-riding issues. As such, I predict the following:

Hypothesis 3b: Increases in the number of partners will eventually lead to negative returns in box office revenue such that there is an inverted U-shaped relationship.

Effect of Studio's Broadly-Defined Experience on Performance of Motion Picture Projects

While the characteristics of resources- such as the size of the production budget, the number of top stars, and the number of production partners- are important for the performance of

the film project, the studio's prior experience with managing resources throughout the production process is also a critical factor for the likelihood of success of that film project. Poorly conceived and executed film projects may flop at the box office despite employing top stars or partnering with multiple studios.

As compared to the resources that can be contracted to work on a film project, the specific experience of a studio in producing a film typically lies within the firm. A studio's own prior experience of making films cannot be easily imitated by others and provide it with a substantial competitive advantage. Furthermore, I differentiate between two kinds of experience of the studio: broadly-defined experience with making all types of films and narrowly-defined experience with making movies within specific genres. I then examine the different impacts of each of these experiences on performance of film projects. In the next section, I explore the role of a studio's broadly-defined experience on performance of its film projects.

Broadly-defined Experience

To begin with, studios rely on their ongoing activities with film projects of all kinds to develop and accumulate broadly-defined experience of designing and executing these projects. First, studios carefully decide which projects to take on and develop further from a lineup of new ideas, pitches, and story lines. As scholars noted, the green-lighting process to approve or decline a film project is not only idiosyncratic but also very difficult, involving much careful consideration and debate about the financial viability of the project (Eliashberg, Elberse, & Leenders, 2006; Elberse, 2002).

When the project enters the production stage, a complex set of activities needs to be well planned, effectively coordinated, and smoothly executed. Efficient communication must be ensured at all times among various specialists including cinematographers, stunts specialists,

camera and electrical crews, costume and wardrobe consultants, among others. Last but not least, postproduction processes also highlight the importance of the studio's broadly-defined experience with transforming crews' collective effort of tweaking special effects, dubbing, and editing into a final product that meets artistic and technical standards.

The studio relies on its prior experience to perform its different activities following its idiosyncratic and path-dependent production processes. As the studio continually performs these activities in various film projects across market domains, it gradually accumulates broadly-defined experience and develops a better understanding about how to more effectively deploy its various resources on any given film project. In contrast with resources assigned to a film project that are only lined up for the duration of that project, the studio continues to draw upon such broadly-defined experience as it works through various film projects.

Synthesizing motion picture economics with research on firm experience, I argue that a studio's broadly-defined experience with managing film projects in distinct markets can allow the studio to achieve a better understanding of film production and become more proficient in managing film projects in different genres, thus leading to better performance of its projects. Specifically, research has shown that having exposure to a broader range of experience can facilitate a firm's new product development (Salvato, 2009). Similarly, Nerkar and Roberts (2004) argued that a firm can better pick new projects and introduce new products across distinct market categories by leveraging its greater experience in different domains. Furthermore, having greater experience with managing projects of different kinds creates more opportunities for various types of learning and produces a more substantial knowledge base that the firm can leverage upon in different situations (Haunschild & Sullivan, 2002; Huber, 1991). As such, a studio learns to become more effective in managing a complex set of activities in production,

more proficient in dubbing, tweaking, and final editing to show a higher quality film as it gains more broadly-defined experience. In addition, since this experience is specific to a particular studio, it tends to be causally ambiguous and difficult to imitate; therefore, extensive broadly-defined experience, aside from the resources assigned to projects, is an important source of competitive advantage (Barney, 1991; Kor et al., 2007; Ethiraj et al., 2005). This will translate to better performances on various film projects that the studio takes on. Taken together, I predict the following:

Hypothesis 4: An increase in the broadly-defined experience of a studio will lead to an increase in the box office revenue of its films.

Combining Broadly-defined Experience with Production Budget

As argued earlier, the characteristics of resources that are attached to a film project and the studio's broadly-defined experience with managing projects of different kinds can separately contribute to the performance of that project. I further contend that the assigned production budget and the studio's broadly-defined experience interactively influence the performance of that film. Specifically, I argue that the broadly-defined experience of a studio can enhance its ability to derive more value from the production budget assigned to its films.

First, having greater experience with managing projects of all kinds enables a studio to engage in a broader search for better solutions to enhance the contribution of the assigned financial resources that can be applied to different film projects across all genres. Research has shown that firms are more likely to find creative ways to use available resources when they have more experience (Sonenshein, 2014). This is because the greater prior experience of different kinds enables a studio to explore and compare from a wider range of alternatives to recombine and reconfigure the available resources to obtain more value.

In addition, as a studio gradually accumulates more broadly-defined experience with managing projects of different genres, it learns to make better use of financial resources and deploy them in improved ways to achieve the best possible outcomes in different contexts (Egelman et al., 2016). Specifically, having more experience of different kinds creates more opportunities for various types of learning that can help improve performance in different situations (Haunschild & Sullivan, 2002). Drawing upon its greater broadly-defined experience with managing film projects across different genres, a studio is more likely to be aware of better ways to enhance the value of the assigned production budget in a film.

In other words, a higher level of broadly-defined experience will allow a studio to more fully exploit the potential of working with a lavish production budget by leveraging its extensive broadly-defined experience across different genres to obtain value from the available resources. In contrast, the lavish financial resources assigned to the project may not produce corresponding results if the studio does not have substantial experience with managing different kinds of projects to make proper use of those resources. Taken together, a studio that has more broadly-defined experience become more aware of potential ways of using financial resources that it has learned from different genres, which give them more options to improve outcomes. Thus, I predict the following:

Hypothesis 5a: The positive effect of production budget on box office revenue of a film will be enhanced when the firm has a higher level of broadly-defined experience.

Combining Broadly-defined Experience with Top Stars

I argued earlier that featuring top stars in a film project can potentially improve the box office performance of that film and that greater broadly-defined experience of the studio can also lead to higher box office revenue. Furthermore, I argue that the benefits that a studio can obtain

from a top star in a film project can be enhanced by its broadly-defined experience with managing film projects of different genres.

Featuring top stars in a film can bring additional appeal to a broader base of fans (Albert, 1998), providing moviegoers with decision heuristics (Levin et al., 1997), and making the film more recognizable and attractive (Desai & Basuroy, 2005). Thus, they can improve the entertainment value of films in which they appear (Litman & Kohl, 1989). Nonetheless, it is the studio's primary responsibility to make sure that various tasks were smoothly executed, and all the creative inputs were welded well together into a final art piece (Litman, 1983). Broadly-defined experience of a studio determines the extent to which it can apply to the proper use of its creative talents across all types of contexts thus influences its ability to obtain value from the featured stars in its film projects.

Specifically, greater broadly-defined experience allows a studio to explore a range of alternatives from different genres in finding more ways to derive value from the featured stars. Increasing evidence suggests that more experience of different kinds contributes to creativity by increasing the number of potential paths one can search and the number of potential ways of resources can be used (Amabile, 1997; Shane, 2000). Moreover, scholars have noted that a diverse base of experience can improve the productivity of available human resources (Koch & McGrath, 1996). Recent research also highlights that greater experience of different kinds can help the firm to discover new ways to assign their human resource to perform different tasks (Salvato, 2009).

Furthermore, a higher level of broadly-defined experience also gives a studio more opportunities to learn how to better manage various situations working with a great variety of top stars and the ways through which the value of stars can be more fully exploited. Specifically, the

studio can make more appropriate adjustments to make stars fit their roles and better accommodates the stars preferences in its films. In other words, greater broadly-defined experience creates a broader base of knowledge that can be leveraged upon in enhancing the value of top stars that are assigned to a film to improve the entertainment value of the film. Taken together, I argue that a higher level of broadly-defined experience can enhance the contribution of featuring top stars in a film. Thus, I predict the following:

Hypothesis 5b: The positive effect of top stars on box office revenue of a film will be enhanced when the firm has a higher level of broadly-defined experience.

Combining Broadly-defined Experience with Production Partners

Earlier arguments suggested that collaborating with other studios on a film project can improve the likelihood of box office success of that film. This is because enlisting production partners can allow the focal firm to draw on a broader base of knowledge from its partners (Vandaie & Zaheer, 2014; Lavie, 2006). It also enables the studio to add more appealing attributes to its film to improve its entertainment value. Furthermore, I argue that such benefits will be diminished when the studio has a higher level of broadly-defined experience.

Specifically, a studio accumulates broadly-defined experience from managing film projects across different genres and relies on such experience to guide its practices on any given project that it takes on throughout the processes from preproduction planning to postproduction editing. Such processes highlight the importance of the focal firm's broadly-defined experience with turning available resources, on its own, into a finished product that meets technical standards and has public appeal (Lampel & Shamsie, 2003; Danneels, 2011; Mahoney & Pandian, 1992; Shamsie et al., 2009). In other words, a higher-level of broadly-defined experience enables the studio to leverage more of its own knowledge and expertise in different

genres in managing the underlying film project and therefore reduces the importance of its partners' contribution.

Under these conditions, collaborating with production partners can create coordination and communication issues with the different partners while performing complex tasks on a project (Gulati et al., 2012; Albers, Wohlgezogen, & Zajac, 2016). Moreover, conflicts could arise from different routines and procedures among partners during collaboration. Consequently, the focal firm can be forced to make changes in order to accommodate the conflicting demands from a higher number of partners that may be detrimental to the appeal of the film to potential audiences. These issues can lead to problems with the development of the project resulting in the reduction of the box office potential of the finish film. Taken together, I therefore predict the following:

Hypothesis 5c: The positive effect of production partners on box office revenue of a film will be diminished when the firm has a higher level of broadly-defined experience.

Effect of Studio's Narrowly-Defined Experience on Performance of Motion Picture Projects

Narrowly-defined Experience

While the broadly-defined experience of a studio indicates a collective assessment of this studio's overall accumulated experience with managing film projects across different genres, narrowly-defined experience describes the level of a studio's experience with managing film projects within a particular genre. As noted earlier, experience is not only firm-specific but also context-specific (Argote & Miron-Spektor, 2011; Haas & Hansen, 2005) and different kinds of firm experience may produce different learning outcomes (Fong-Boh et al., 2007; Ingram & Baum, 1997). Specifically, narrowly-defined experience reflects a firm's effort and commitment to pursue opportunities within a particular market. This leads to specialized learning that may

improve a firm's effectiveness in performing tasks and activities related to that product market (Narayanan et al., 2009; Eggers, 2012).

In the motion picture industry, studios are constantly faced with decisions about which products and markets to pursue (Neale, 2000). As Shamsie and colleagues (2009) point out, a studio chooses to build upon a specific set of experience to address certain product markets through the selection of specific genres. In fact, several theorists and practitioners have elaborated upon the economic and socio-cultural functions that a genre performs (Thompson & Boardwell, 1994; Altman, 1984; Neale, 2000; Buscombe, 1970; Jauss, 1982). A film genre stands for a cinematic story form that contains various generic elements based on certain formula. Such formula involves the patterns of actions, sequences of events, and relationships among characters to be portrayed in ways that link films within the same genre together and distinguish them from other genres (Grant, 1986; Sobchack, 1975; 1988). Thus, different genres denote distinct product categories which have different demands for plotting, artistic portrayal, and aesthetic appeal (Neale, 2000; Buscombe, 1970). As such, the kinds of skills and talents needed to produce a film project are primarily determined by the film genre (Shamsie et al., 2009). In addition, the significance of genres ties closely with industrial and commercial nature of the motion picture industry. In this context, genres facilitate scale economies of production of films, as artistic products are similar within category while being unique across ranges. To this point, Neale (2000) noted that "genres enable the industry to meet obligations of variety and difference inherent in products but also enable it to manufacture its products in a cost-effective manner, and to regulate demand and nature of its output to minimize risks" (p. 218).

Thus, the narrowly-defined experience that is governed by genres guides studios to improve upon their practices over time from repeated activities that are tied to each of the film

genres. It reflects a studio's deliberate effort and commitment to exploit opportunities within a specific genre. Such effort and commitment translate into a better understanding of how to manage film projects within that genre (Rossman & Schilke, 2014; Shamsie et al., 2009). As a studio gains more experience within a narrow range, it develops specialized knowledge and expertise and learns to carry out a selected range of tasks and activities in a more effective manner (Clark & Huckman, 2012; Narayanan et al., 2009). However, narrowly-defined experience may lose some of its benefits with the increased accumulation of such experience limited to a certain genre. This is because repeating film projects of the same genre underscores production processes that aim to meet similar demands for plotting, setting, aesthetic appeal and so forth (Gomery & Pafort-Overduin, 2011; Jauss, 1982). It limits the opportunity that a studio can learn from performing different tasks related to different genres. In other words, the narrow range of experience produces a limited knowledge domain that the studio can draw upon in executing different tasks (Taylor & Greve, 2006). As such, a studio becomes less likely to find alternative solutions in developing and executing new projects as it keeps stacking up experience within a specific genre. Taken together, having greater narrowly-defined experience can only help the studio to a certain extent in terms of the box office revenue of its films. Thus, I predict the following:

Hypothesis 6: An increase in the narrowly-defined experience of a studio will lead to diminishing marginal returns in the box office revenue of its films.

Combining Narrowly-defined Experience with Production Budget

I theorized earlier that the production budget assigned to a film project and the studio's narrowly-defined experience with managing the project of a certain genre could both contribute to the performance of this project. I further contend that the studio's narrowly-defined experience

and production budget interactively influence the project performance. To be more precise, I argue that a studio can derive more value from the production budget assigned to its film of a certain genre when it has a higher level of narrowly-defined experience with managing film projects within that genre.

Specifically, a studio chooses to build upon a certain set of experience over time which leads to more opportunities to develop specialized learning about how to execute a selected range of tasks and activities related to films within a certain genre (Shamsie et al., 2009; Narayanan et al., 2009). As the studio continues to stack up the narrowly-defined experience with film projects within the particular genre, it gradually develops and refines a specific set of routines related to projects of that kind (Ethiraj et al., 2005). This will allow the studio to deploy financial resources most effectively to achieve the best possible outcomes with film projects within that genre. In other words, a higher level of narrowly-defined experience of the studio can enable it to obtain more value from the assigned financial resources in a film project within that genre.

Indeed, assigning a greater amount of financial resources to a film may give the studio more opportunities to do more with the film by adding more attributes. Nevertheless, a higher level of narrowly-defined experience of the studio can allow it to better exploit those opportunities by investing the financial resources in the most appealing plots and attributes within the genre of that film to enhance the film's entertainment value. Thus, a studio can further enhance the potential contribution of the lavish production budget assigned to its films when it has a higher level of narrowly-defined experience with film projects within that genre. As such, I predict the following*:*

Hypothesis 7a: The positive effect of production budget on box office revenue of a film will be enhanced when the firm has a higher level of narrowly-defined experience.

Combining Narrowly-defined Experience with Top Stars

Furthermore, I propose that the extent to which a studio can benefit from assigning top stars in a film project is also influenced by its narrowly-defined experience with managing film projects within the genre of that film. Specifically, the potential contribution of featuring top stars to the box office performance of films will be reduced when the studio has a higher level of narrowly-defined experience with film projects within that particular genre.

As noted earlier, films of different genres require distinct skills and knowledge to meet different demands concerning normative storytelling and artistic setting associated with those genres (Neale, 2000; Buscombe, 1970; Gomery & Pafort-Overduin, 2011). Studios that have gained rich experience in the given genre apply their knowledge and understanding about how to design and manage a film project in that domain. They rely on their accumulated experience with managing film projects within this genre to guide the processes through which acting talents are portrayed and managed. In other words, a studio is more likely to draw upon its own knowledge and expertise to make a good film within that genre rather than relying on the use of top stars when it has a higher level of narrowly-defined experience of projects in that genre. This could reduce the likelihood that the studio can derive value from the use of top stars.

Moreover, studios have to make adjustments to make stars fit their roles and to accommodates the stars' preferences which may conflict with the ways that studios manage the processes based on their prior experience. However, a studio that possesses greater narrowly-defined experience is less able to adapt to work with different stars and less likely to find better solutions to use those stars. This is because deep experience within a narrow range can make the studio over-reliant on its routines such that repeating similar projects could reinforce old behavior, drawing from familiar patterns and relying on heuristics when approaching a new

project (Benner & Tushman, 2003; Audia & Goncalo, 2007). In other words, a studio that possesses greater narrowly-defined experience is less willing to experiment with new ideas or to search for alternative ways of using the resources (Schilling et al., 2003; Abernathy & Wayne, 1974). Thus, it becomes less able to detect improved ways to portray top stars to more fully exploit the potential benefits they could offer. As such, greater narrowly-defined experience could attenuate the potential contribution that can be derived from the use of top stars. Taken together, I predict the following:

Hypothesis 7b: The positive effect of top stars on box office revenue of a film will be diminished when the firm has a higher level of narrowly-defined experience.

Combining Narrowly-defined Experience with Production Partners

Similarly, I further propose that the extent to which a studio can gain from enlisting production partners on a film project is influenced by the studio's narrowly-defined experience such that greater narrowly-defined experience reduces the potential benefits a studio can gain from collaborating with partners. As a studio gradually accumulates experience with managing film projects within a particular genre, it learns how to better design and execute a film project within that genre. The more of these experience that the studio has pertained to the genre, the less likely the studio has to rely on the use of its partners' knowledge and expertise in a film project within that genre. As such, the potential benefits that adding production partners could offer is diminished when the studio has a higher level of narrowly-defined experience.

Moreover, through the accumulation of experience within a specific genre a studio becomes more entrenched in its own routines from repeating similar projects. This may hinder its ability to adapt to the routines of its partners on a project, even if those routines might be superior. Thus, a studio which possesses greater narrowly-defined experience might not be aware

of potential ways in which it could combine and deploy its partners' resources. This could also reduce the benefits that the studio might gain from collaborating with partners in a film project within that genre. Taken together, I predict the following:

Hypothesis 7c: The positive effect of production partner on box office revenue of a film will be diminished when the firm has a higher level of narrowly-defined experience.

I theorized earlier that the potential benefits that a studio can obtain from collaborating with production partners will be diminished when the studio has a higher level of broadly-defined experience across different genres. Similarly, I argued that having greater narrowly-defined experience with managing film projects within a certain genre also reduces the potential contribution of collaborating with partners. Furthermore, I argue that the negative effect is stronger when the firm has a higher level of broadly-defined than when it has a higher level of narrowly-defined experience.

Compare to the studios that possess a higher level of broadly-experience with managing film projects across different genres, a firm with more narrowly-defined experience has fewer kinds of expertise of its own. Even though collaborating with partners may create potential coordination and communication issues (Gulati et al., 2012; Albers et al., 2016), a studio with more narrowly-defined experience may have to leverage more of its partners' resources in the film project. This is because such a studio has a limited knowledge domain of its own from its prior experience tied to a certain genre. As such, it is more likely to draw upon on its partners' expertise and obtain some benefits from collaborating with partners in the underlying project.

In contrast, studios with greater broadly-defined experience are more likely to leverage their various types of expertise across different film genres and less likely to rely on their partners' contribution. Indeed, each film project is unique. However, the various types of

learning associated with the enriched experience with managing different kinds of projects create a broader base of knowledge which confers an ability to apply its expertise from other domains to the underlying project. To this point, Garzon-Vico and colleagues (2016) noted that more experience of different kinds leads to a greater range of knowledge that, in part, can be applied to new and different areas. Similarly, Zander and Kogut (1995) argued that enriched experience can facilitate knowledge transformation across contexts. As such, the studio's greater broadly-defined experience with managing different kinds of projects further reduces its need to leverage its partners as resources because it can do more on its own in the project. Therefore, the potential benefit to gain from having production partners is further reduced for the studio with a higher level of broadly-defined experience than those have more narrowly-defined experience. Thus, I predict the following:

> *Hypothesis 7d: the positive effect of number of partners on box office revenue will be much lower when the firm has a higher level of broadly-defined experience than when the firm has a higher level of narrowly-defined experience.*

METHODS

This dissertation explores how specific project-based resources and distinct firm-based experience, separately and jointly, contribute to the performance of film projects within the motion picture industry. To test my theory and hypotheses, I draw on a sample from the Bollywood film industry, focusing on films produced and distributed by major Bollywood film studios between 1997 and 2016.

Sample

Over 1500 films in more than 20 languages are released in India each year, making the Indian film industry the largest in the world in terms of production volume *(Deloitte, 2016).* This industry is dominated by Bollywood, which produces Hindi films, accounting for almost half of aggregated domestic box office revenue in India (more than the next two, Tamil and Telugu combined[5]). Some even contend that "Bollywood has been central to the Indian national identity for almost a century" (Lorenzen & Mudambi, 2012, p. 514). Although the history of Bollywood can be traced back to the first half of the 20th century, the industry was dominated by the masala (mixed-genre) formula for almost 50 years. Since mid-1980s, the major Bollywood studios have started to adopt the genre-based movie format and have become more comparable and competitive to their international counterparts.

Furthermore, the Bollywood film industry is relatively less concentrated when compared to Hollywood. Whereas Hollywood is dominated by a few studios including Twentieth Century-Fox, Warner Bros., Paramount, Universal, Sony /Columbia, and Disney (Miller & Shamsie, 1996; Vandaie & Zaheer, 2014; Mannor et al., 2016), the Bollywood film industry does not show such oligopolistic market structure. There are numerous studios competing in this market

[5] Although Bollywood films only account for 15% of total outputs released in a year, they represent 40%-45% of total domestic box office revenue in India.

contributing to an averaged 10.5% cumulative annual growth in recent years (*Deloitte, 2016).* To gain a better understanding of how project resources and experience of studios contribute to their film performance, I focus on major Bollywood studios that have released at least 10 films since their inception. Although the full list contains more than 3300 films released over a twenty-year horizon, the larger share of films were produced by smaller studios and arthouses that were either short-lived or that only released one or two films. Therefore, the final sample of this dissertation consists of approximately 800 films released by 47 major Bollywood studios over the 20-year period from 1997 to 2016.

The list of films was first drawn from www.boxofficeindia.com and was then supplemented with additional information from other sources such as the studios' own websites, IMDB, and Wikipedia. This sample represents a near-comprehensive list of released featured films produced and distributed by major Bollywood studios within this market.

Variables

Variables for this study fall into two distinct categories: those related to each film and those related to the firm that produces each of these films. In order to determine the firm that we assign to each film, I gathered data on the production companies from IMDB. When there are more than one production company listed on the site, I checked on Wikipedia and the studios' websites as secondary sources. If this did not provide any more clarification, I assigned the film to the production company listed on IMDB with the most experience as the main production company.

Dependent variable

Domestic box office revenue. The goal of this dissertation is to explore the contribution of resources that are assigned to a film project as well as the experience of the studio with

managing such a project, separately and jointly, to the box office performance of this film project. Domestic box office gross has been one of the most important and reliable performance indicators of films in the motion picture industry (Litman, 1983; Wallace et al., 1993; Sochay, 1994; Litman & Ahn, 1998; De Vany & Walls, 1999; for a review, see Eliashberg et al., 2006). Moreover, Crook and colleagues (2008) highlighted that RBV researchers can draw more meaningful implications by adopting market-based measure of performance than measures of value appropriation. Thus, I use domestic box office revenue as the measure of film performance. Domestic box office revenues of films were first collected from www.boxofficeindia.com (BOI hereafter) and then cross-checked with other sources, such as IMDB and Wikipedia, to ensure their validity. Because domestic box office revenues of films is highly skewed, I applied a log transformation of this variable. This is consistent with prior literature that log transforms the domestic box office revenue as the dependent variable to address influence of extreme values in motion picture research (Basuroy et al., 2006; De Vany & Walls, 1999).

Independent variables

Production budget. *The size of production budget* indicates the level of financial resources assigned to each film project. Information about production budget was collected from BOI and was cross-checked with IMDB and Wikipedia. I then applied a log transformation of this measure to minimize potential influence of extreme values due to the high skewness of the distribution of production budget. A quadratic term of the production budget was then created to examine the hypothesized curvilinear effect of production budget on box office revenue of film projects.

Top stars. *Top stars* indicate the level of key acting talents assigned to each film project. Featuring star actors and actresses in a film project can improve the entertainment value of films and appeal to a broader base of moviegoers (Albert, 1998; Levin et al., 1997). I have compiled a list of top stars primarily based on information from BOI. BOI maintains a list of top actors and actress in Bollywood of all time based on the total number of films in which they took on lead acting roles throughout their career that were box office hits. Household names such as Akshay Kumar, Ajay Devgn, Aamir Khan, Govinda, Rani Mukherjee, and Kareena Kapoor were frequently mentioned on this list.

However, I needed to determine the specific years that each of these all-time stars should either appear or not appear on the annual list of top stars. I tied their appearances on the list based on the box office performance of their recent films in accordance with prior research on top stars (Albert, 1998; Wallace et al., 1993). In particular, a star remains on the list in the next *three* [6] years (and was coded as a top star in films which they took on lead acting roles) after the year of his or her most recent box office success based on information from BOI.

Specifically, BOI describes the performance of a film on the basis of nine categories: *All Time Blockbuster, Blockbuster, Super-Hit, Hit, Semi-Hit, Average, Below Average, Flop, Disaster*. Although BOI does not disclose its proprietary formula of these categorizations, a film that is labeled as a *Semi-Hit* at least is typically one of the top grossing films within the year in which the film was released. As such, I included a star on the list in the next three years after the year in which he or she has assumed leading roles in a film that was categorized as either one of the followings: *All Time Blockbuster, Blockbuster, Super- Hit, Hit, Semi-Hit.*

[6] To test the robustness of my finding, I also coded stars on the basis of a two-year window following their most recent successful films. This alternative measure is discussed in the results section (supplemental analyses).

As a result, approximately 10 actresses and 15 actors were identified as top stars in any given year between 1997 and 2016. Drawing from this revised list, I first aggregated the total number of top stars that take on leading roles in each film. I then created a quadratic term of the number of top stars assigned to each film so that the curvilinear effect of top stars on box office performance of film projects in which they appear can be examined.

Production partners. *The number of production partners* captures the extent to which the focal studio can draw from a broader base of resources from its partners in jointly developing and executing the film project by mobilizing resources across firm boundaries. In order to identify the number of production partners in a film project, I needed to separate the studio that is the principal production company from its collaborating partners.

Specifically, I first collected information from IMDB regarding the production companies in each film. A film was then assigned to the studio that was listed as the principal production company in the film. When there is more than one production company listed on IMDB in a film, I then gathered data on the production companies from Wikipedia. In the absence of such available information from Wikipedia, I turned to the studios' websites for additional clarification when their websites can be found[7]. In cases when following the above steps still did not provide me with a clear indication, the film was assigned to the production company listed on IMDB with the most experience as the principal studio. The number of production partners in a film is then the total number of collaborating companies listed for each film. Furthermore, I created a quadratic term of this variable to examine its curvilinear influence on the box office performance of films.

[7] Some of the studios' websites were not readily available during the data collection stage of this dissertation.

Using film genres to study studio experience

As noted earlier, scholars have elaborated upon the functions that a genre performs in motion picture industry (Thompson & Boardwell, 1994; Buscombe, 1970; Altman, 1984; Jauss, 1982). Originally a French word meaning "kind" or "type", a film genre depicts a cinematic story form that has certain thematic components, characters, plots, settings, and techniques (Neale, 2000). It usually contains certain elements from generic formula (Schatz, 1981). Because of the different formula and components tied to the different genres, Neale (2000) further noted that "different genres possess their own individual characteristics, their own conflicts, and their own ways of resolving the issues with which they deal" (p. 215). Therefore, different genres represent distinct product markets that have different demands for plotting, setting, characters, and artistic styling (Buscombe, 1970; Gomery & Pafort-Overduin, 2011). As such, film genres determine the kinds of skills and talents needed to produce and execute a film project. Through the selection of film genres, studios choose to build upon a specific set of experience to address different product market opportunities (Shamsie et al., 2009).

In spite of some minor differences, scholars have identified a list of genres that can serve as the primary basis for categorization of films in the motion picture industry (Thompson & Bordwell, 1994; Schatz, 1981; Grant, 1977; Gomery & Pafort-Overduin, 2011; Finler, 2003). It should be noted, however, that the previous categorization of film genres has mostly focused on featured films in *Hollywood* such that some film genres (e.g. *Western*[8]*)* do not apply to the context of this study. In order to use film genres to study the experience of studios in *Bollywood*, I draw from previous studies (e.g. Miller & Shamsie, 2001; Shamsie et al., 2009) and employ a

[8] A western film typically involves a frontier existence that encounters opportunity, hardship, violence, danger, and bounty in crossing or extending the nation's borders as a reflection of America's history (Buscombe, 1970).

modified categorization of 12 genres in this dissertation including: action, adult, animation, comedy, drama, horror, love story, masala, mystery, romantic comedy, science fiction/fantasy, and thriller.

I gathered data on the genre of each film from BOI. It should be pointed out that BOI only identifies the primary genre of each film while movie sites such as IMDB may associate a film with more than one genre. I chose BOI, instead of IMDB, as the primary source for film genre for two reasons. First, while IMDB may associate a film with two or three genres, it does not identify the primary genre of the film. Instead, the film genres are listed alphabetically for a film. Second, scholars have highlighted that it is the primary genre of a film that determines the normative structure of a film and the kinds of expertise needed to execute the film project (Perretti & Negro, 2007; Gomery & Pafort-Overduin, 2011).[9]

Broadly-defined experience. *Broadly-defined experience* serves as a proxy of the studio's overall capacity to manage a complex set of tasks in designing and executing film projects following its firm-specific processes that are accumulated from prior projects. Furthermore, existing research has shown that recency of prior experience should be taken into consideration in examining its impact on firm behaviors and outcomes (Argote, Beckman, & Epple, 1990, Eggers, 2012). Specifically, it was argued that only recent experience is relevant to a focal firm's learning, since acquired knowledge may become irrelevant over a long stretch of

[9] As a side of caution, I also randomly selected a subsample of films and cross checked the genre of each film with IMDB. I have also compared the synopsis of each film, the primary genre listed on BOI with the definition of film genre provided by Neale (2000). The information was mostly consistent.

time (Argote et al., 1990). Therefore, a studio's broadly-defined experience is measured by the studio's experience with different film genres in the previous five years. [10]

Consistent with prior research (Egelman et al., 2016; Staats & Gino, 2012), I adopted a Herfindahl-Hirschman Index (HHI) type of measure for the broadly-defined experience of a studio. More specifically, I first calculated the percentage of a studio's experience in different film genres within the past five years in which the underlying film was released. Next, I obtained their squared values and aggregated the components. Because a larger HHI value is inversely related to the broadly-defined experience, I then subtract the value from 1.[11] As mentioned before, the experience was measured for the firm that was assigned as the major production company for the film.

Narrowly-defined experience. *Narrowly-defined experience* reflects the studio's commitment to pursue distinct opportunities in different product markets as categorized by film genres. The primary genre of a film defines the basis for its normative storytelling and artistic setting (Neale, 2000; Perretti & Negro, 2007; Gomery & Pafort-Overduin, 2011). A studio gradually accumulates experience with managing film projects in certain genres reflecting its deliberate choices of selective markets and persistent efforts in pursuing those opportunities in those markets (Shamsie et al., 2009). Therefore, I first collected information about the primary genre of each film project that a studio has carried out previously. I then obtained a count of the

[10] To test the robustness of my finding, I also created an alternative of this variable that measures a studio's broadly-defined experience by the number of different genres of films that it has produced in the previous 10 years.

[11] I also measured broadly-defined experience of a studio by obtaining the total number of different genres of films that it has produced in the previous five years as another robustness check.

number of films that the studio has produced in the previous five[12] years in the given genre that is tied to each film. Moreover, a quadratic term of this variable was created to examine its curvilinear impact on the box performance of films.

Control variables

Screens. Theatrical distribution and exhibition of a film has major influence on its box office performance (Albert, 1998; Eliashberg et al., 2006; Shamsie et al., 2009; De Vany & Walls, 1999). Thus, I control for the number of screens on which each film was released.

Sequel. Previous research shows that the use of sequel is likely to contribute to box office revenue of films (Basuroy, Desai, & Taladar, 2006; De Vany & Walls, 1999; Eliashberg et al., 2006; Ravid, 1999). Therefore, I control for sequel in this dissertation. This variable is coded 1 for sequels and 0 otherwise.

Year. Motion picture research has shown that the timing of release of a film can influence the box office performance of that film (Sochay, 1994; Litman & Kohl, 1989; Goldberg, 1991). In this dissertation, I added a dummy for the year in which the film was released to control for the influence of release time and potential influence from changing market conditions.

Estimation

To analyze the data that I have sampled, I used both generalized estimating equation (GEE) modeling and ordinary least squares (OLS) analysis. I chose GEE modeling as my primary estimation method given that my data structure can be described as an unbalanced panel in which multiple observations reside within studios. Although the unit of analysis in this

[12] To ensure robustness of my finding, I also measure a studio's narrowly-defined experience by aggregating the total number of films that it has produced in the previous 10 years in the given genre that is tied to each film.

dissertation is the film project, I theorized that the experience of a studio that manages the project also plays a crucial role in extracting value from resources assigned to this project. The experience of a studio is firm-specific and accumulates over time. It is important to correct for within-group correlation at the firm level and GEE modeling can effectively address this issue (Hardin & Hilbe, 2013). As such, GEE modeling appears to be a more appropriate technique. Furthermore, I standardized each of the variables before creating their multiplicative terms of these variables to test for interaction effects (Cohen, Cohen, Aiken, & West, 2003). Moreover, multiple robustness checks were performed to ensure the validity of my findings. Most centrally, I will report the results of the GEE analyses as the primary analysis in the next section and the results of the OLS analyses in the supplemental analyses section.

Table 1 – Data Measures

Construct		Measures	Calculation	Level
Dependent Variable				
	Domestic box office revenue	Gross revenue from domestic box office	ln(In_Gross)	Project
Independent Variables				
	Quadratic term of the size of production budget	The size of production budget assigned to each film squared	[ln(Budget)^2]	Project
	Quadratic term of the number of Top stars	The total number of top stars featured in each film squared	(The number of Stars^2)	Project
	Quadratic term of the number of production partners	The total number of production companies in each film squared	(The number of production companies ^2)	Project
	Broadly-defined experience	The studio's experience with different genres of films it has produced in previous 5 years	$\mathbf{B} = 1 - \sum_{i=1}^{N} s_i^2$	Studio
	Quadratic term of the narrowly-defined experience	The number of films that a studio has produced in the given genre in previous 5 years squared	(The number of films produced in the given genre ^2)	Studio
Control Variables				
	Screens	The number of screens on which each film was released		Project
	Sequel	Dummy code films which are sequels		Project
	Year	Year of release		Year

RESULTS

In this chapter, I present the results of this dissertation in three sections. First, I present the descriptive statistics and inter-correlations of the variables in this study. These can be found in Table 2, and I will briefly discuss some of the interesting findings from this table. Next, I present the results of my primary analyses, in which I utilized GEE modeling to test each of the hypothesized relationships. Specifically, I selected independence correlation structure in conducting GEE analyses because QIC tests showed this one best specified the working correlation structure in my sample (Cui, 2007; Pan, 2001).[13] These results are presented in Table 3. Following that, I will also present the results of my supplemental analyses in Table 4 and Table 5. Table 4 features the results from my first set of supplemental analyses, in which I used alternative measures of the moderators to test my hypotheses. In addition, I also utilized another analytical method- OLS regression to analyze my data. I present these results in Table 5.

Descriptive Statistics

As mentioned, the descriptive statistics and correlations matrix of all the variables in my study can be found in Table 2. As expected, domestic box office revenue has an extremely large variance in my sample with the maximum value of 4,953,000,000 rupees (approximately $71 million USD [14]) for *Dangal* to a minimum value of 14000 rupees (approximately $200 USD) for *Dhara*. Similarly, production budget also shows a very large variance with the maximum value of 1,800,000,000 rupees (approximately $26 million USD) for *Prem Ratan Dhan Payo* to a minimum value of 1,000,000 rupees for *Munnibai B.A.B* (approximately 14000 USD). Though I

[13] Although I report the results of GEE analyses using an independence correlation structure, the results generally hold for analyses using an exchangeable correlation structure.

[14] The currency conversions are based on the exchange rate between Indian Rupees and US Dollars as of 4/29/2019

reported raw values in the descriptive statistics, log transformation of both domestic box office revenue and production budget were applied because the distributions of these two variables were very highly skewed. This is consistent with prior research in motion picture economics that log transform box office receipts and production budget to minimize the influence of extreme values due to their skewness (Basuroy et al., 2006; De Vany & Walls, 1999).

In my sample, the number of production partners in a film project ranges between zero and eight. Approximately 48% of films were produced by a single studio (no partner) while the remaining 52% of films were jointly produced by at least two production companies. Two films were produced by eight production companies including *Speedy Singhs* and *Chauranga*. In addition, 54% [15] of films featured at least one top star. Among them, 27% of films used one top star and 27% featured more than one top star. In addition, three films had five top stars, the highest number of stars assigned to a film in my sample, including *Eklavya – The Royal Guard, Kabhi Alvida Na Kehna, and Kabhi Khushi Kabhie Gham.*

Furthermore, a total of 11 genres were identified in my sample. Drama represents the highest percentage (29%) while science-fiction (Sci-Fi) has the least amount (0.6%)[16]. This low appearance of Sci-Fi films in my sample seemed a bit surprising at first given the increasing popularity of Sci-Fi films in Bollywood in recent years (Deloittee, 2016). Perhaps this is because such information is drawing on the basis of the primary genre of each film. Many times, films are associated with more than one genres. However, scholars argue that it is the primary genre of a film defines its normative structure and artistic setting (Perretti & Negro, 2007; Neale, 2000).

[15] This is using a list of top stars on the basis of a three-year window following their most recent successful films as described in the previous chapter. The alternative measure of top stars which used a two-year window shows that 51% of films featured at least one top star.

[16] Due to missing information on certain key variables, two animation films were dropped. Thus, Sci-Fi films represent the smallest category in this study.

For instance, films such as *PK* and *Rudraksh* are not primarily Sci-Fi films despite having some Sci-Fi twists. The broadly-defined experience of a studio ranges between zero and one, that *Eros International* appears to have the greatest breadth of experience across film genres. Meanwhile, *UTV Motion Pictures* has the deepest experience in managing drama films that it was able to leverage prior experience with 18 drama films (or 28 drama films) from the previous five years (or the previous 10 years) in managing the film of *Haider*.

Although the descriptive statistics are generally in line with expectation, there are some strong correlations among the variables in my sample. For example, both production budget and screens are strongly correlated with domestic box office revenue at 0.81 and 0.77 respectively. These correlations are expected to be high as big-budget films are likely to attract more audiences to theaters. The strong correlation between screens and production budget can also be explained by the same reason. The other correlations are mostly as expected. For instance, the production budget has a positive relationship with the number of top stars and the number of production partners (r=0.47, r=0.30). In addition, both the number of top stars and the number of production partners are related to domestic box office revenue at 0.46 and 0.20, respectively.

Perhaps an interesting note, the relationship between the size of production budget and narrowly-defined experience (r=0. 11) is weaker than the relationship between the size of production budget and broadly-defined experience (r=0.24). In addition, the number of production partner has a moderately positive relationship with narrowly-defined experience (r=0.21) and with broadly-defined experience (r=0.20). Moreover, both broadly-defined experience and narrowly-defined experience have negative relationships with the number of top stars (r=-.06, and r=-.06), suggesting that firms feel less compelled to work with top stars in their films as they become more experienced. Moreover, although only 44 sequels were identified in

my sample, the use of sequels appears to have moderate relationships with screens, production budget, and the number of top stars (r=0.23, r=0.13, r=0.12, respectively).

Primary Analyses

Table 3 reports the results of the primary analyses of this study using GEE modeling. Model 1 only includes baseline control variables. Of note, the number of screens on which each film was released is expected to be positively related to domestic box office revenue. The coefficient is positive and statistically significant ($p<0.001$). Similarly, the use of sequel is expected to contribute to box office revenue of films. However, this variable is not statistically significant (b= 0.18; p=0.14). Perhaps this can be explained by the low percentage of sequel films identified in my sample (0.6%). Next, in order to examine the curvilinear effect on box office performance of production budget, top stars, production partners, and their interactions with experience variables, the first order standardized terms of these variables were then included. As Model 2 indicates, both the size of production budget and the number of top stars are positively related to box office revenue. Their coefficients are statistically significant ($p<0.001$; $p<0.05$). Contrary to expectation, the number of production partners is negatively related to box office revenue. However, its coefficient is not statistically significant (b= -0.05; p=0.43). Finally, both broadly-defined experience and narrowly-defined experience positively relate to box office revenue although only the narrowly-defined experience was marginally significant (b=0.07, p=0.09).

Table 2 – Correlations and Descriptive Statistics

						Correlations												
		Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Domestic box office revenue (000)	371,000	559,000	14	4,950,000	1.00												
2	Screens	878.26	883.09	1	4350	0.77	1.00											
3	Sequel	0.06	0.23	0	1	0.18	0.23	1.00										
4	Production budget (000)	246,000	280,000	1000	1,800,000	0.81	0.88	0.13	1.00									
5	Number of Stars [a]	0.95	1.09	0	5	0.46	0.36	0.12	0.47	1.00								
6	Number of Partners	0.85	1.12	0	8	0.20	0.28	0.09	0.30	0.09	1.00							
7	Broadly-defined Experience (B=1-HHI,5 years) [a]	0.58	0.26	0	1	0.18	0.33	0.07	0.24	-0.06	0.20	1.00						
8	Narrowly defined Experience (5 years) [a]	2.41	3.12	0	18	0.11	0.13	0.03	0.11	-0.06	0.21	0.29	1.00					
[a] Variables 5, 7, 8 were used in primary analyses; [b] Variables 9, 10. 11 were used as alternative measures replacing variables 5, 7, 8, respectively, in supplemental analyses, [c] Variables 12, 13 were used in supplemental analyses replacing variables 7,10, respectively, as additional robustness checks																		
9	No. of Stars (list b) [b]	0.94	1.10	0	5	0.46	0.34	0.11	0.47	0.95	0.08	-0.08	-0.08	1.00				
10	Broadly-defined Experience (B=1-HHI,10 years) [b]	0.62	0.23	0	0.84	0.19	0.33	0.05	0.25	-0.02	0.17	0.85	0.25	-0.03	1.00			
11	Narrowly-defined Experience (10 years) [b]	3.35	4.47	0	28	0.15	0.15	0.05	0.14	-0.06	0.18	0.24	0.92	-0.07	0.21	1.00		
12	Broadly-defined Experience (5years) [c]	4.01	2.39	0	9	0.26	0.43	0.05	0.33	-0.05	0.31	0.77	0.54	-0.08	0.69	0.47	1.00	
13	Broadly-defined Experience (10 years) [c]	4.50	2.43	0	10	0.26	0.44	0.04	0.34	-0.05	0.29	0.73	0.50	-0.07	0.75	0.47	0.93	1.00

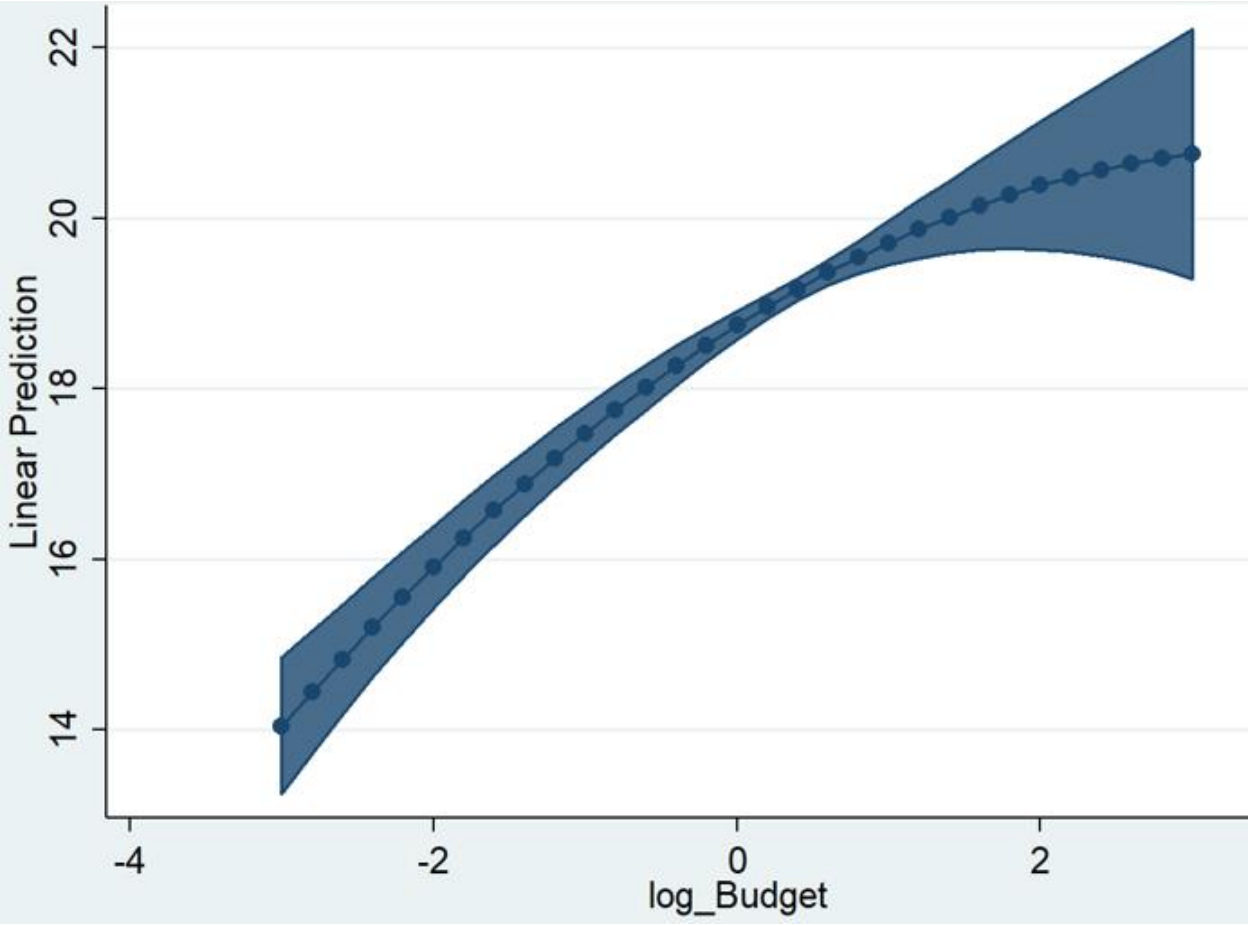
Hypotheses 1a, 2a, and 3a predict diminishing marginal returns on domestic box office revenue with the increasing amount of project resources assigned to films. As indicated by the negative coefficient of the quadratic term of production budget ($b = -0.15$, $p<0.05$), hypothesis 1a is supported such that there is a tapering effect on box office revenue associated with the increase in the size of production budget. Similarly, hypothesis 2a predicts that there is a diminishing marginal return on box office associated with the use of more top stars in a film. The coefficient of the quadratic term of the number of top stars is negative and statistically significant ($b = -0.08$, $p<0.01$). Thus, I find strong support for hypothesis 2a as well. While the coefficient of the quadratic term of the number of production partner is negative, it is not statistically significant ($b=-0.02$, $p=0.59$.). This result fails to provide support for hypothesis 3a.

Hypotheses 1b, 2b, and 3b predict that increases in the amount of these resources will eventually lead to negative returns on domestic box office revenue such that the relationships are inverted-U shaped. To examine the curvilinear impacts on the domestic box office revenue of films by adding more of production budget, top stars, and partners, I first plotted these results in Figure 1 through 3. As shown in these figures, the estimates of production budget are relatively more precise than those of top stars and production partners. In Figure 1, the marginal benefits associated with assigning greater production budget diminish as the (standardized) size of production budget increases. In order to examine whether or not adding more production budget may eventually lead to declined performance, I specified several spline functions.

Following Harrell's (2001) recommendation, I began with placing multiple equally-spaced knots over the range of production budget. When placing observations into 5 knots, the initial test showed a negatively significant coefficient of the 5^{th} quintile following the first four positive knots. While it seems to suggest that there might be a change in slope from positive to

negative in the 5th quintile, further exploration at a more granular level is needed to examine whether there is a turning point at which adding more production budget will produce declining return. Thus, I divided the observations into 10 groups and 20 groups and constructed linear spline functions respectively.

Figure 1 – Logged production budget and predicted values of logged domestic box office revenue with 95% confidence intervals



Drawing from prior studies that use spline function to test curvilinear effect on performance above and below aspiration levels (e.g. Greve, 2003; Joseph & Gaba, 2015; Park, 2007), a change in the slope from positive to negative at a threshold would indicate an inverted-U relationship such that increasing production budget, by itself, will yield declining return beyond this threshold. Although the slope for the 86-90 percentile interval was negatively

significant [17], the results show an overall non-significant slope above this level after splitting the correlations into two variables at the 86th percentile. Therefore, an increase in production budget leads to declining marginal returns but this does not turn negative. Thus, hypothesis 1b is not supported.

Next, I followed similar steps for the use of additional stars using mkspline in Stata 13 in constructing linear spline functions in measuring change in slopes before and after the inflection point. The results show that adding the fourth top star is unlikely to make further contribution to box office revenue based on the statistics from spline functions. Although Figure 2 seems to suggest that having more than 3 stars in a film might actually have an adverse impact on the box office revenue, I was unable to find a statistically significant slope for this interval. In other words, this result failed to conclusively demonstrate negative return for the use of additional stars. Hypothesis 2b is not supported.

Finally, I also plotted Figure 3 illustrating the relationship between the number of production partners and box office revenue. However, no spline tests were performed since both correlation coefficients of first order and quadratic term were non-significant. Thus, I was not able to find support for hypothesis 3b.

[17] I suspect this is likely influenced by two extreme observations which were very expensive (89th percentile of production budget) box office failures including *Broken Horses* and *Zanjeer*.

Figure 2 – Number of stars and predicted values of logged domestic box office revenue with 95% confidence intervals

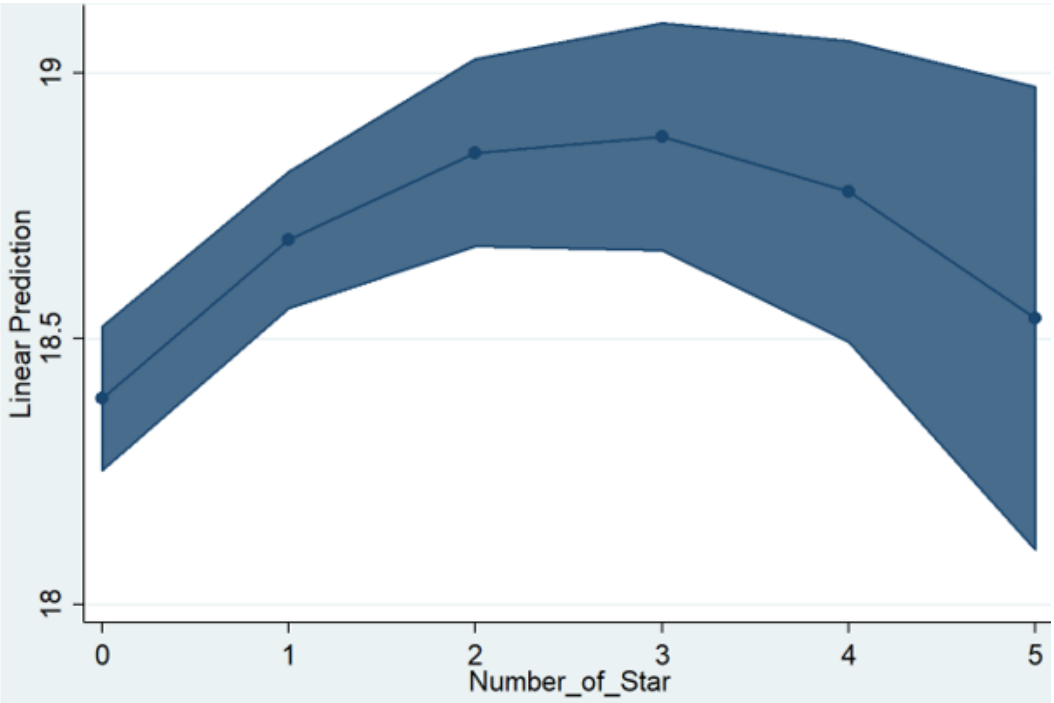


Figure 3 – Number of production partners and predicted values of logged domestic box office revenue with 95% confidence intervals

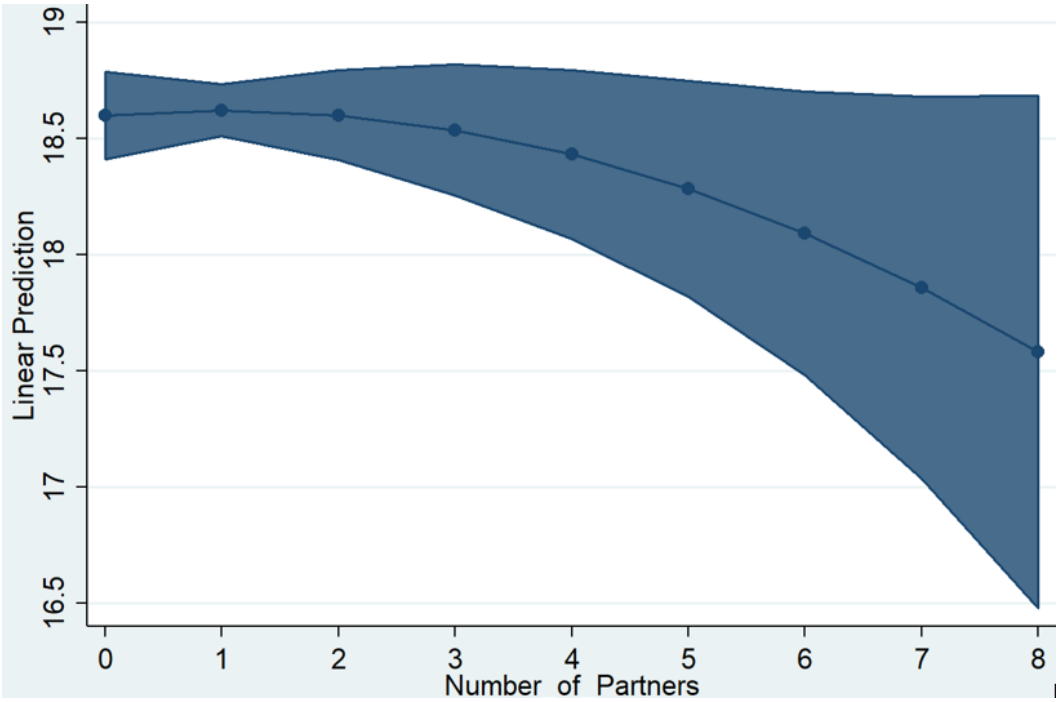


Table 3 – **GEE Regression Coefficients and Robust Standard Errors**

Predicting Domestic Box Office (with a 5 – year time window of experience variables)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
			Domestic Box Office Revenue (logged)			
Screens	0.002***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Sequels	0.181	0.355*	0.288*	0.356*	0.364*	0.372**
	(0.123)	(0.145)	(0.121)	(0.147)	(0.142)	(0.140)
Production Budget (*logged)*		1.565***	1.163***	1.564***	1.551***	1.558***
		(0.108)	(0.138)	(0.108)	(0.105)	(0.100)
Number of Stars		0.082*	0.255***	0.083*	0.075*	0.070†
		(0.036)	(0.060)	(0.036)	(0.037)	(0.037)
Number of Partners		-0.052	-0.011	-0.052	-0.050	-0.051
		(0.066)	(0.093)	(0.066)	(0.065)	(0.067)
Broadly-defined Experience (BDE, 5 years)		0.059	0.041	0.060	0.073	0.061
		(0.053)	(0.051)	(0.055)	(0.056)	(0.051)
Narrowly-defined Experience (NDE, 5 years)		0.066†	0.067	0.060	0.059	0.024
		(0.039)	(0.041)	(0.079)	(0.040)	(0.044)
Budget x Budget			-0.147*			
			(0.059)			
Stars x Stars			-0.083**			
			(0.025)			
Partners x Partners			-0.015			
			(0.029)			
NDE x NDE (5 years)				0.002		
				(0.018)		
Budget x BDE (5 years)					0.036	
					(0.055)	
Stars x BDE (5 years)					-0.094*	
					(0.042)	
Partners x BDE (5 years)					0.022	
					(0.054)	
Budget x NDE (5 years)						0.123†
						(0.071)
Stars x NDE (5 years)						-0.119**
						(0.038)
Partners x NDE (5 years)						-0.013
						(0.026)
Intercept	17.896***	19.117***	18.938***	19.114***	19.091***	19.157***
	(0.459)	(0.508)	(0.497)	(0.522)	(0.475)	(0.410)

n = 664 in model 2 through 6, n=722 in model 1

*** p <0.001; ** p <0.01; * p <0.05; †p < .10

Robust standard errors are in parentheses; year dummy variables included

Hypothesis 4 predicts that an increase in the broadly-defined experience of a studio is positively related to the box office revenue of its films. Although the coefficient of this variable is positive, as shown in Model 2, it is not statistically significant (b=0.06; p=0.27). Thus, hypothesis 4 is not supported. Hypotheses 5a through 5c predict that the broadly-defined experience of a studio moderates the relationships, in different patterns, between each of the predictors including production budget, top stars, and production partners, with box office revenue of its films, respectively. In order to test these hypotheses, I include these interactions in Model 5.

Specifically, hypothesis 5a argues that a higher level of broadly-defined experience of a studio can enhance the positive effect of the production budget on box office revenue of its films. As indicated in Table 3, the coefficient of broadly-defined experience interaction with the size of production budget is positive but not statistically significant (b=0.04, p=0.51). Thus, the result fails to provide support for this prediction.

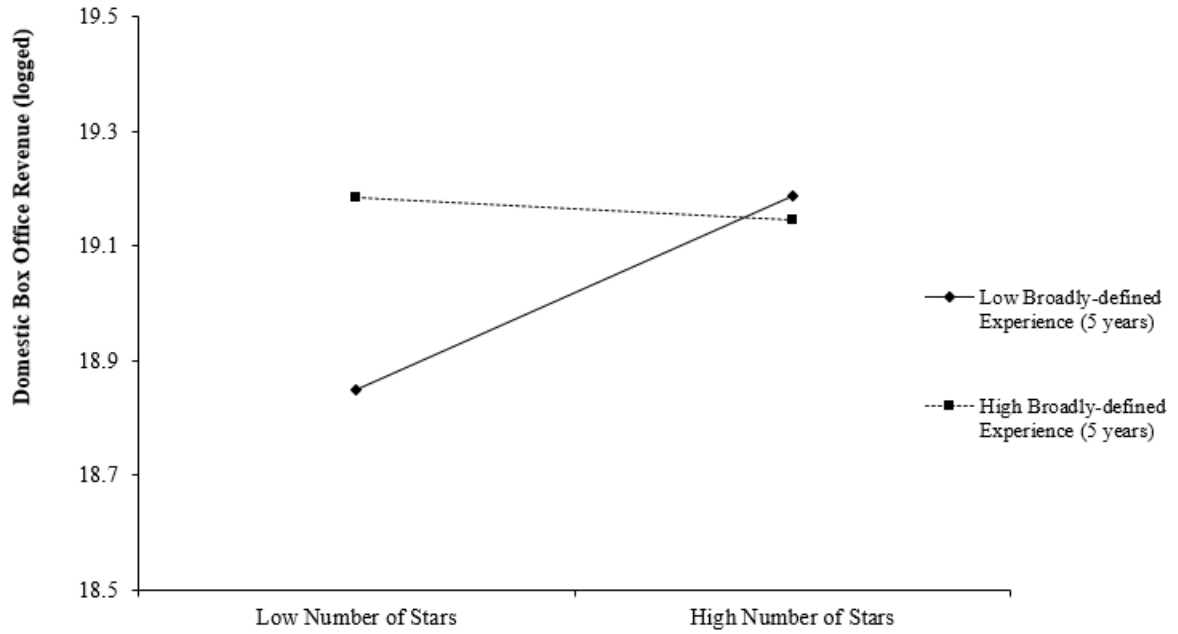
Similarly, hypothesis 5b predicts that a firm can generate more revenue with more top stars when it has a higher level of broadly-defined experience. Contrary to my prediction, the interaction effect of broadly-defined experience with the number of top stars is negatively significant (b=-0.09, p<0.05). I plotted this interaction in Figure 4. As Figure 4 indicates, having more broadly-defined experience with managing film projects in different genres does not enable the firm to obtain more value from more top stars[18]. Thus, hypothesis 5b is not supported.

Furthermore, hypothesis 5c suggests that the positive effect of production partners on box office revenue is diminished when the studio has a higher level of broadly-defined experience.

[18] Though Figure 4 suggests that a higher level of broadly-defined experience could potentially buffer the adverse impact of not having any top star in a film. This will be discussed further in the following chapter.

However, the interaction effect of broadly-defined experience with the number of production partners is non-significant (b=0.02, p=0.69). Thus, this result fails to provide support for hypothesis 5c.

Figure 4 – Interaction Effect of Broadly-defined Experience with Number of Stars Predicting Domestic Box Office Revenue (logged)



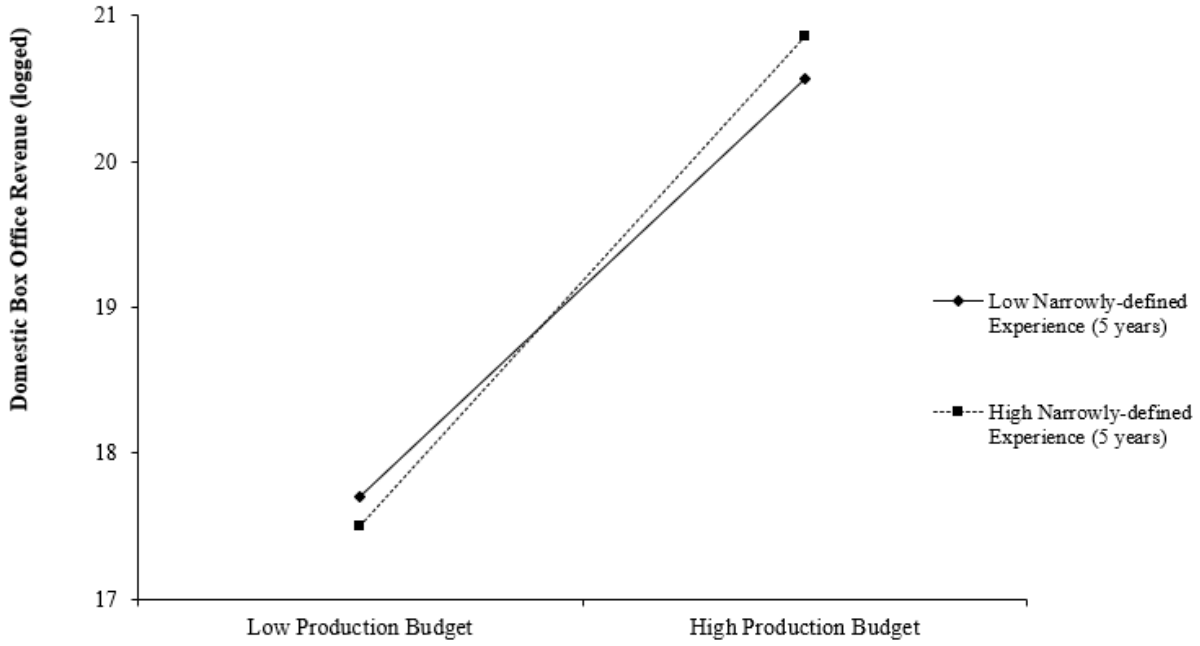
Hypothesis 6 argues that there is a diminishing marginal return on box office revenue associated with an increase in the narrowly-defined experience of a studio. In order to test this hypothesis, I include the quadratic term of narrowly-defined experience in Model 4. The coefficient of its quadratic term is not statistically significant (b=0.02, p=0.91). Thus, I do not find support for this prediction.

Moreover, hypotheses 7a through 7c predict that the narrowly-defined experience of a studio moderates the impact on box office revenue of production budget, top stars, and production partners in different ways. To test these hypotheses, I include their interactions in Model 6. Specifically, hypothesis 7a predicts that the positive effect of the production budget on

box office revenue of films can be enhanced when the studio has a higher level of narrowly-defined experience. As shown in Table 3, the coefficient of narrowly-defined experience interaction with the production budget is positive and marginally significant (b=0.12, p=0.09).

This result is plotted in Figure 5 illustrating its interaction effect. According to Figure 5, the narrowly-defined experience of a studio amplifies the positive impact of production budget on the box office revenue of its films such that a studio that has more experience within a certain genre can extract more value from an increase in budget for films within that genre. Though a relatively inexperienced studio with a certain genre of films can make more use of a constrained production budget in making films within that genre. Overall, the result shows some support for this prediction.

Figure 5 – Interaction Effect of Narrowly-defined Experience with Production Budget Predicting Domestic Box Office Revenue (logged)

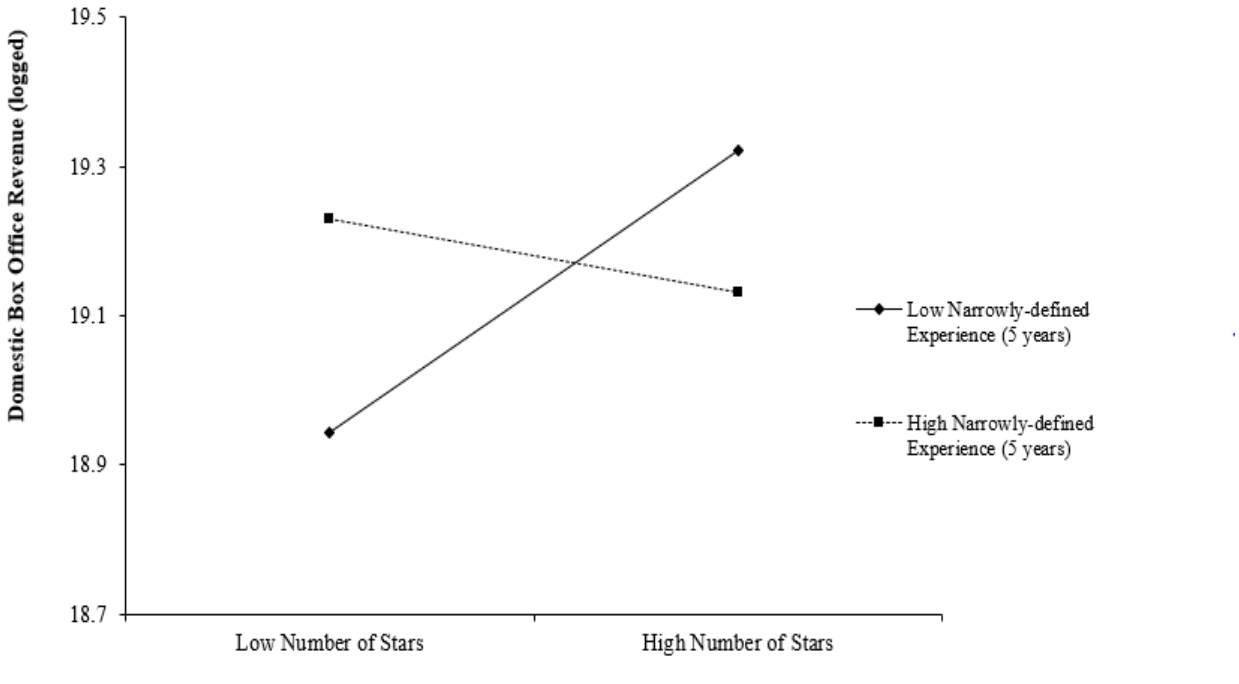


Hypothesis 7b predicts that the positive impact of top stars on box office revenue is reduced when the studio has a higher level of narrowly-defined experience with films within that

genre. The result provides support for this prediction that the coefficient of the interaction between the number of top stars featured in a film and its box office revenue is negative and statistically significant (b=-0.12, p<0.01).

This interaction is plotted in Figure 6 to further illustrate this result. As shown in this figure, having more narrowly-defined experience within the same genre undermines a studio's ability to extract more value from the use of multiple top stars. This finding is consistent with my overriding argument that the narrowly-defined experience of a studio hinders its ability to continue to derive more value from adding more top stars in its film projects. In addition, this result appears to be quite robust with different time windows of experience and analytical methods[19] across several robustness checks.

Figure 6 – Interaction Effect of Narrowly-defined Experience with Number of Stars Predicting Domestic Box Office Revenue (logged)



[19] The results of these additional robustness checks are presented in the supplemental analyses section.

Meanwhile, other results do not provide support for hypothesis 7c and 7d. Specifically, I theorized that the positive impact of adding production partners on box office revenue of a film will be reduced when the studio has a higher level of narrowly-defined experience with films within that genre. The coefficient of the interaction term between these two variables is negative but not statistically significant. Thus, hypothesis 7c is not supported. In addition, hypothesis 7d predicts that the positive effect of production partners on box office revenue is reduced even more when the studio has greater broadly-defined experience than when it has greater narrowly-defined experience. Because there is no significant moderating effect of broadly-defined experience or narrowly-defined experience with the number of partners, I was not able to find support for hypothesis 7d.

To summarize, of the 15 hypothesized relationships, only four were supported based on the primary analyses using GEE regression. Consistent with prior research though, the effects of production budget and top stars appear to be quite strong. Of particular interest in this study, there are limits to the benefits that can be derived from adding more production budget and assigning more top stars to a film.

In addition, there were some interesting findings for the effect of experience on the value that could be extracted from resources. Specifically, prior experience of a studio can allow it to extract more value from its production budget when it has accumulated a higher level of experience with films only within that genre. Nonetheless, the positive effect of top stars on the box office revenue of a film was negatively impacted by broad as well as narrow experience. To ensure the validity of these findings, I conducted multiple robustness checks and present the results in the supplemental analysis section that follows.

Supplemental Analyses

I conducted a large number of supplemental analyses testing my models using alternative measures of the independent variables[20] and moderators. In addition, I also utilized other analytical techniques. In what follows, I present the results of some of these supplemental analyses in two tables. First, Model 7-11 in Table 4 feature the results using alternative measures of moderators. Next, I present the results using OLS regression with robust standard errors in Model 12-16 in Table 5.

The first set of supplemental analyses focused on the moderating variables. Specifically, I created an alternative measure of broadly-defined experience of a studio with different film genres in the previous *10 years* following the HHI type of approach. In particular, I obtained the squared values of the percentages of a studio's experience in different genres within the past *10 years* and then subtracted the aggregated components of the squared values from 1.[21] Similarly, the narrowly-defined experience of a studio is measured by the number of films it has produced in the same genre in the previous *10 years*.

Applying this wider time window could potentially allow me to examine whether firm experience becomes irrelevant quickly and how fast learning decays. These analyses worth exploring given the rapid development in information technology in recent decades and

[20] I applied an alternative list of top stars in measuring the number of stars assigned to a film as another robustness check. In particular, it defines the list of stars in any given year based on a two-year window following his/her most recent success (as opposed to three years). The results were highly consistent with the primary analyses presented in Table 3. To save space, these results are not presented here.

[21] I also measured broadly-defined experience of a studio by counting the total number of different genre of films that it has produced in the past 5 years, and 10 years, respectively, as additional robustness checks. I do not discuss the results of these additional robustness checks since the results were highly consistent.

advancement in production processes in many different sectors including the entertainment industry.

I present the results of this set of supplemental analyses in Table 4 beginning with the baseline model. As indicated in Model 7, the coefficients of both broadly-defined experience and narrowly-defined experience remained non-significant. Model 8 includes the quadratic terms of resource variables. Consistent with Model 3 in Table 3, the coefficients of quadratic terms of production budget and top stars remained negative and statistically significant ($b=-0.15$; $p<0.05$; $b=-0.09$, $p<0.05$ respectively), providing support to hypothesis 1a and 2a. Hypothesis 3a, predicting diminishing return on box office revenue by adding more partners, was not supported ($b=-0.02$; $p=0.61$). Furthermore, no support was found for hypotheses 1b, 2b, and 3b after reconstructing linear spline functions using mkspline in Stata 13. Specifically, I was unable to conclusively demonstrate a change in slopes from positive to negative for these variables.

No support was found for hypothesis 4 that the effect of broadly-defined experience on box office revenue was positive but not significant. Model 10 presents the results of interaction effects regarding broadly-defined experience, addressing hypotheses 5 a through c. Again, no support was found in this model. Model 9 includes the quadratic term of narrowly-defined experience. Although the coefficient of the quadratic term of narrowly-defined experience became negative, comparing to Model 4 in Table 3, it remained non-significant ($b=-0.01$; $p=0.34$) thus failed to provide support to hypothesis 6. Model 11 concerns the interaction effects of narrowly-defined experience with budget, stars, and production partners. Similar to Model 6 in Table 3, only hypotheses 7a and 7b received some support. In particular, the coefficient of the interaction term of narrowly-defined experience with production budget was positive and marginally significant ($b=0.11$, $p=0.06$). Hypothesis 7b was supported as indicated by the

coefficient that was negative and statistically significant (b=-0.11, p<0.001). In short, results from this set of supplemental analyses are consistent with the primary analyses. In addition, the main effect of broadly-defined experience remained non-significant while the main effect of narrowly-defined experience shrank but became non-significant (b=0.02, p=0.62). As such, there were no meaningful differences between the five-year and 10-year time window in terms of experience effects.

Next, I present another set of supplemental analyses in which I utilized hierarchical OLS regression with robust standard errors to account for the potential influence of heteroskedasticity (Wooldridge, 1989). The results of OLS regression analyses are presented in Model 12 through 16 in Table 6. To begin with, Model 12 includes the baseline predictor variables. The results are largely in line with primary analyses. Production budget is positive and statistically related to domestic box office revenue (p<0.001) while the coefficient of top stars becomes marginally significant (p=0.052).

Model 13 includes quadratic terms of the resource variables. The results were consistent with Model 4 in Table 3. The squared term of production budget is negatively significant related to box office revenue (b=-0.15, p<0.001) supporting hypothesis 1a. Similarly, the negatively significant square term of top stars (b=-0.08, p<0.01) provides support for hypothesis 2a. Hypothesis 3a, however, is still not supported (b=-0.02, p=0.60). Consistent with the primary analyses, I was not able to find support for hypotheses 1b, 2b, and 3b.

Furthermore, Model 14 includes the quadratic term of narrowly-defined experience and its coefficient remains non-significant (b=0.002, p=0.91). Model 15 includes interactions of broadly-defined experience with budgets, top stars, and production partners, addressing hypotheses 5 a through c. Same as model 5 in Table 3, these hypotheses are not supported.

Finally, Model 16 shows the interaction effects of narrowly-defined experience regarding hypotheses 7a through 7c. Of note, only hypotheses 7a and 7b are supported as indicated by the positive, and negative coefficients, respectively ($b=0.12$, $p<0.05$; $b=-0.12$, $p<0.01$). Since no significant moderating effect was found for broadly-defined experience or narrowly-defined experience with production partners, hypothesis 7d was not supported. Other results were almost identical comparing to Model 6 in Table 3. In short, results from OLS regression analyses are largely consistent with the primary analyses. Taken together, my findings from the primary analyses are generally robust across these supplemental analyses.

Table 4 – GEE Regression Coefficients and Robust Standard Errors

Predicting Domestic Box Office (with a 10-year time window of experience variables)

	Model 7	Model 8	Model 9	Model 10	Model 11
	Domestic Box Office Revenue (logged)				
Screens	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Sequels	0.362**	0.297*	0.352*	0.378**	0.380**
	(0.138)	(0.117)	(0.137)	(0.135)	(0.133)
Production Budget	1.552***	1.148***	1.555***	1.518***	1.549***
(*logged)*	(0.107)	(0.136)	(0.108)	(0.100)	(0.096)
Number of Stars	0.089*	0.269***	0.088*	0.091*	0.076*
	(0.037)	(0.061)	(0.037)	(0.035)	(0.038)
Number of Partners	-0.041	-0.060	-0.040	-0.039	-0.039
	(0.065)	(0.091)	(0.065)	(0.065)	(0.064)
Broadly-defined	0.077	0.027	0.071	0.076	0.073
Experience (BDE, 10	(0.053)	(0.053)	(0.053)	(0.054)	(0.050)
years)					
Narrowly-defined	0.023	0.063	0.060	0.020	-0.011
Experience (NDE, 10	(0.047)	(0.051)	(0.076)	(0.047)	(0.039)
years)					
Budget x Budget		-0.149*			
		(0.060)			
Stars x Stars		-0.088*			
		(0.026)			
Partners x Partners		-0.015			
		(0.029)			
NDE x NDE (10 years)			-0.012		
			(0.012)		
Budget x BDE (10 years)				0.008	
				(0.051)	
Stars x BDE (10 years)				-0.122*	
				(0.042)	
Partners x BDE (10 years)				0.012	
				(0.060)	
Budget x NDE (10 years)					0.112†
					(0.059)
Stars x NDE (10 years)					-0.108**
					(0.034)
Partners x NDE (10 years)					-0.021
					(0.025)
Intercept	19.124***	18.957***	19.152***	19.073***	19.188***
	(0.482)	(0.464)	(0.485)	(0.440)	(0.361)

n = 678

*** p <0.001; ** p <0.01; * p <0.05; †p < .10

Robust standard errors are in parentheses; year dummy variables included

Table 5 – OLS Regression Coefficients and Robust Standard Errors

Predicting Domestic Box Office (with a 5 – year time window of experience variables)

	Model 12	Model 13	Model 14	Model 15	Model 16
	Domestic Box Office Revenue (logged)				
Screens	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Sequels	0.355*	0.288*	0.356*	0.364**	0.372**
	(0.138)	(0.135)	(0.139)	(0.135)	(0.133)
Production Budget	1.565***	1.163***	1.564***	1.551***	1.558***
(*logged)*	(0.074)	(0.142)	(0.075)	(0.080)	(0.073)
Number of Stars	0.082†	0.255***	0.083*	0.075†	0.070†
	(0.042)	(0.067)	(0.042)	(0.042)	(0.043)
Number of Partners	-0.052	-0.012	-0.052	-0.050	-0.051
	(0.048)	(0.064)	(0.048)	(0.049)	(0.048)
Broadly-defined	0.059	0.041	0.060	0.073	0.061
Experience (BDE, 5	(0.047)	(0.045)	(0.048)	(0.050)	(0.047)
years)					
Narrowly-defined	0.066†	0.067†	0.060	0.059	0.024
Experience (NDE, 5	(0.040)	(0.040)	(0.070)	(0.040)	(0.047)
years)					
Budget x Budget		-0.147***			
		(0.041)			
Stars x Stars		-0.083**			
		(0.025)			
Partners x Partners		-0.015			
		(0.029)			
NDE x NDE (5 years)			-0.002		
			(0.020)		
Budget x BDE (5 years)				0.036	
				(0.056)	
Stars x BDE (5 years)				-0.094*	
				(0.045)	
Partners x BDE (5 years)				0.022	
				(0.055)	
Budget x NDE (5 years)					0.123*
					(0.056)
Stars x NDE (5 years)					-0.119**
					(0.042)
Partners x NDE (5 years)					-0.013
					(0.029)
Intercept	19.117***	18.938***	19.114***	19.091***	19.157***
	(0.564)	(0.562)	(0.566)	(0.540)	(0.461)

n = 664

*** p <0.001; ** p <0.01; * p <0.05; †p < .10

Robust standard errors are in parentheses; year dummy variables included

DISCUSSION

The conventional RBV view emphasizes control of VRIN resources as a sufficient condition for firms to achieve SCA (Barney, 1991; Peteraf, 1993). However, this traditional view of RBV has impeded our understanding about how firms can derive the most benefits from these resources (Kraaijenbrink et al., 2010). This is especially important in project-based industries where firms rely on access to commonly available resources in order to improve the performance of their projects. Since such resources are available to all the firms within the industry, each firm must search for ways to increase the value that they can derive from them.

To begin with, whereas the RBV literature emphasizes the possession of VRIN resources as a sufficient condition for firms to achieve SCA, I argue that there are limits to the benefits that can be derived from simply having access to VRIN resources. In other words, this dissertation challenges the traditional RBV view which implies that firms could continue to improve performance by increasing the amount of VRIN resources that they draw upon. Specifically, I examined the extent to which firms can benefit from the addition of such resources and demonstrated that adding more production budget and assigning more top stars will generate a diminishing marginal return to box office revenue of these films.

Furthermore, I sought to explore the different ways that a firm can obtain value from its resources using the RBV literature (Barney, 1991; Peteraf & Barney, 2003) and research on firm experience (Cuypers et al., 2017; Egelman et al., 2016). In doing so, I developed and tested arguments how a firm's access to resources contributes to its performance and how a firm's prior experience influences the value that it may be able to obtain from its resources. Overall, this dissertation makes several important contributions to the strategic management literature as well as to the motion picture research.

Moreover, this research unpacks the distinct mechanisms through which studios derive more value from the different types of resources by leveraging their prior experience. My findings show that the benefits to be obtained from financial resources and human resources are both tied to prior experience of the firm but through distinct ways. Drawing from these findings, this study sheds lights on the processes through which the role of resource access and the role of prior experience in extracting value from resources contribute to firm performance. The contributions and implications of this study are presented as follows.

The Role of Resource Access

First, this study sheds lights on the extent to which a focal firm can keep benefiting from an increasing amount of financial resources that it has access to. Prior studies in the motion picture research have long argued that bigger production budget can allow more freedom in filmmaking and enables the studios to add more appealing attributes to their films to improve their box office popularity (Litman & Ahn, 1998; Basuroy et al., 2003; Elberse & Eliashberg, 2003). However, my results show that the extent to which firm can continue to improve performance by simply adding more financial resources is limited. The quadratic term of the production budget is negatively significant indicating a diminishing marginal return of production budget on box office revenue. Moreover, the statistics from multiple spline function test indicate the slope for the interval of product budget above 1.26 standard deviation (or above 86 percentile) becomes non-significant, suggesting that additional financial investments above this threshold will not generate additional returns.

There are important managerial implications associated with this finding. In recent years, the average size of the production budget has been continually rising in the film industry[22].

[22] For instance, the average production budget for a Bollywood films has risen from less than half a million dollars to more than 3 million USD between 2000 to 2014. Similarly, the Motion Picture

Scholars commented that studios have been more and more fascinated with pursuing the next massively successful blockbuster by increasingly committing to making big-budget, global-marketed, "event films" (Perren & Schatz, 2004). As my finding indicates, however, any additional investment in the production budget above a certain threshold will not lead to higher box office revenue. In other words, this challenges some scholarly contention that studios can assign bigger budgets to films as an insurance policy to attract more audiences since they cannot predict market trend (Basuroy et al., 2003). To the contrary, this research highlights that additional spending on lavish plots, visual effects, stunning locations, that typically characterize event films are likely to be risky decisions for the studios.

Second, my finding shows that there are limits to the degree to which a firm can continue to improve performance by assigning more top stars to its film projects. The effects of diminishing marginal return from an additional increase in the number of top stars on box office revenue appear to be quite robust across different robustness checks. Research on motion picture economics has long debated on whether or not studios should hire top stars (Elberse, 2007; Liu, Mazumdar, & Li, 2014; Ravid, 1999). This study provides additional insights to managerial practices in the motion picture industry regarding the benefits to be obtained from working with multiple top stars. Specifically, this study shows that while a studio might obtain benefits from the addition of one or two stars to a film, the addition of more stars will lead to diminishing returns in terms of box office revenue. This implies what Pierce and Aguinis (2013) described as the *Too-Much-of-a-Good-Thing* effect when the additional allocation of beneficial resources ceases to have a significant impact on the outcome beyond the inflection point and produce suboptimal result due to economic inefficiency.

Association of America estimated the average production budget has increased by 36% from $55 million in 2002 to $75 million in 2007.

Taken together, these findings provide valuable insights to the RBV literature regarding the extent to which having access to a greater deal of resources can enable the firm to achieve SCA. Prior research in the RBV vein has raised concerns among management scholars that criticize one of the underlying assumptions *more is always better* (Kraaijenbrink et al., 2010). However, few studies have examined whether firms can keep benefiting from increasing the amount of VRIN resources. This study is the first, to my knowledge, to challenge this commonly held assumption and empirically examine whether firms can continue to improve performance by keep adding more of these resources. Furthermore, this study shows that the extent to which a firm can derive value from resources it has access to is also influenced by the prior experience of the firm. In the section that follows, I discuss the findings and contributions regarding the role of a firm's prior experience in extracting value from different types of resources.

The Role of Prior Experience in Extracting Value from Resources

In this study, I also explored how firm attributes may play a role in extracting more value from using the resources that it has access to and examined how different types of firm's prior experience affect its ability in obtaining value from its resources. In so doing, I built on the growing body of research that increasingly emphasizes the importance of firm experience and explores the role of a firm in developing a competitive advantage from using available resources (Holcomb et al, 2009; Cuypers et al., 2017; Sirmon et al, 2011). In particular, my overriding arguments suggest that firms can leverage their broader experience to enhance their ability to make more effective use of their financial resources and human resources but not their partners' resources while their narrower experience might be helpful to extract value from financial resources but not from their human resources or partners' resources.

Although the findings show that the prior experience of a firm does have important implications on the degree to which the firm can benefit from its resources, however, my predictions are mostly unsupported. The results do indicate that having more narrow experience within a certain genre can have a positive impact on the relationship between production budget and box office revenue. However, this relationship does not hold when the firm has broader experience across different film genres. This finding suggests that merely having more exposure to a diverse range of product categories is insufficient for firms to develop a better understanding of how to use financial resources in different contexts. Instead, firms can learn to make better use of financial resources within the same product category because firms gradually accumulate experience within a specific domain and develop their routines in performing similar tasks that are tied to this domain (Narayanan et al., 2009).

Again, this finding has important implications for managerial practices. Specifically, my results show that the prior experience of a firm can enhance the contribution of financial resources to box office revenue. This also suggests that the adverse impact of working with a constrained production budget is even more pronounced among the experienced firms. In other words, more experienced firms can further improve performance when they have access to an adequate amount of financial resources.

In overall terms, the use of production budget complements the prior experience of a firm. Stated differently, sufficient financial resources must be ensured in the presence of accumulated narrowly-defined experience in order to achieve a desirable outcome in terms of box office revenue. This is because firms gradually develop certain routines in performing tasks on the basis of having access to financial resources. As such, prior experience of firms can be

leveraged upon to perform these tasks in better ways only if the needed financial resources have been secured.

At the same time, the extent to which a firm's prior experience can influence its ability to obtain value from human resources is not contingent upon the nature of its prior experience. In other words, the value to be obtained from the use of top stars is tied to all of the prior experience of the firm. Specifically, prior experience of a firm, defined either broadly or narrowly, negatively moderates the relationship between the number of top stars and box office revenue. As predicted, the prior experience of a studio undermines its ability from making more use of top stars.

In fact, the results indicate that greater experience of a firm could compensate for the lack of top stars on a film. Stated differently, stars are much more important to a film when the studio that is associated with it has less experience. In other words, this finding suggests a substitution effect between a firm's prior experience and the use of top stars in its films. While featuring top stars in a film can increase its box office revenue, it also reduces the role of the studio's prior experience. As scholars noted, top stars can bring box appeal to their fans (Wallace et al., 1997). To some extent, the idiosyncratic processes of working with the assigned top stars may even conflict with the studio's routines established from prior experience.

This finding provides valuable insights to managerial practices. First, it highlights the importance of recruiting top stars in film projects amongst the inexperienced studios. Specifically, the use of top stars can enable the studio to improve its project performance in the absence of prior experience. The experienced firms, however, should give very careful consideration about its reliance on top stars. Second, while a firm can best benefit from a higher production budget only when it has a higher level of experience, it may be able to derive more

benefits from top stars when it has lower levels of experience. This is consistent with recent research that suggests the prior experience affect the value to be obtained from different types of resources in distinct ways as a result of specific characteristics of these resources (Mannor et al., 2016).

Limitations

There are several limitations of this dissertation that I would like to acknowledge. Some of these limitations might contribute to the fact that a number of hypotheses did not receive support in this study. First, I theorized earlier that enlisting a production partner could enable the focal firm to draw on a broader base of resources in managing a film project and leverage its partner's expertise to generate more box office revenues. In addition, it was predicted that the increase in the number of production partners will lead to diminishing marginal returns. In this study, however, the impact of having one or more production partners in a film project on its box office revenue was not statistically significant. It is possible that this null finding can be explained by a competing theoretical explanation such that collaborating with another firm can incur communication and coordination issues which may neutralize the potential benefits to be obtained from working with others.

However, I suspect that the empirical limitation associated with the measurement of production partners in this study also contributes to this null finding. When multiple production companies were listed on IMDB and no further clarification could be obtained from their own websites or Wikipedia, it was difficult to establish the primary production firm and to separate it from partners. In these cases, I selected the primary production company as the one which had the most experience. In addition, some of these films were jointly produced by up to eight production companies. It is possible that some of these production partners made significant

contribution while others only played peripheral roles on these films. However, I was not able to explore the specific roles and the respective contributions of each partner in these partnerships due to data unavailability.

Second, while there was some support for hypothesis 2a that predicted diminishing marginal returns from adding more top stars on the box office revenue of films in which they appear, there were relatively few films that had more than one or two stars. This made it difficult for me to demonstrate support for hypothesis 2b that adding more top stars above this level will lead to declined performance. The seemingly inverted-U shaped relationship between the number of top stars in a film and the box office performance of this film is not statistically significant. In particular, only 16 films in my sample had four or more top stars assigned to any given film. This is likely because I followed stringent rules in compiling the list of top stars in my sample after investigating each of the identified star's career trajectories very carefully. As a result, the list of top stars that I adopted in this study is a lot shorter than many other studies in the motion picture industry that examine the impacts of stars (Basuroy et al., 2003; Wallace, Seigerman, & Holbrook 1993).

Finally, the overall lack of support for the interaction effects between project resources and firm prior experience might be explained, to some extent, by measurement error of firm experience. Specifically, the different types of experience of a studio were measured by its prior experience with managing film projects on the basis of film genres. While this is consistent with prior research using film genres to study the experience of studios (e.g. Shamsie et al., 2009), the identification of film genres in this study is mostly relying on BOI which only identified the primary genre of films. Indeed, some scholars argue that the primary genre of a film determines the basis of the kinds of skills and expertise needed to produce the film (Perretti & Negro, 2007;

Gomery & Pafort-Overduin, 2011). However, the assumption that the primary genres of films listed on BOI *always* fully and appropriately describe each of the distinct product categories of films is unwarranted. In fact, some of the other sites such as IMDB may assign as many as three genres to a film.

In addition, it is also possible that a studio can gradually gain exposure to other kinds of films from the different elements of its prior films that were outside of its focal domain. This, perhaps, can be better illustrated with an example. *Rudraksh*[23], was categorized as an action film but it contains certain elements of a Sci-Fi and crime/thriller film. The company, *Karma Entertainment*, that produced this film might have accumulated some experience with managing Sci-Fi and thriller films that can be leveraged upon in making its next film *Tathastu* that was categorized as crime/thriller. As such, the influence of a studio's experience that can be leveraged upon in extracting value from its resources might be undermined by the measurement error of the studio's experience.

Future Directions

Several additional avenues can be identified for future research related to this dissertation. First, valuable insights can be obtained from further exploration of how partnerships with other firms contribute to project performance by adopting a more nuanced measure of production partners and delineating the specific roles of each partner. Specifically, management scholars can more convincingly ascertain the role of partnership in managing a project through uncovering the companies that take on lead roles in collaborating with others. In this regard, interviewing company executives to learn how each of the company's partners contributes to a collaborative venture can significantly improve our understanding about how a focal firm can

[23] Rudraksh (2004) was categorized as an Action film on BOI and Action, Fantasy, Sci-Fi on IMDB

leverage its partners as resources in managing its projects. This will also allow us to further untangle the processes through which the benefits to be obtained from collaborating with others can be enhanced by leveraging its prior experience with different product markets.

Next, how firms select their production partners on the basis of their prior experience is another interesting future avenue. Previous research has shown evidence that prior experience of collaborations of the focal firm has an impact on its ability to derive value from subsequent collaborative ventures (Heimeriks & Duysters, 2007; Hoang & Rothaermel, 2005). It is questionable, however, whether a firm's prior experience with managing projects of different kinds can enable it to continue to derive more value from having collaborative experience with other firms. In other words, it is not clear whether the experience of collaborating with others can be complemented or substituted by the focal firm's experience with managing projects of different types. Further exploration in this vein can also yield important insights to managerial practices in guiding a firm's decisions regarding the types of projects on which the firm should work with other partners rather than work on its own.

Finally, future studies in motion picture research can benefit from different types of measures of a firm's prior experience, perhaps through the use of other analytical approaches, to more fully capture the role of a studio's experience with managing film projects of different kinds. Experience can be measured on the basis of the production budgets of prior movies among other aspects. This will also us to examine the distinct mechanisms through which different kinds of prior experience produce distinct learning outcomes in different contexts (March, 2010; Eggers, 2012).

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