A DOMINANT LOGIC VIEW OF MANAGING IT INNOVATION

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ABSTRACT

With rapid technological advances and increased competition, managing innovation has become increasingly challenging. There are two possible causes for the innovation project failure. First, owing to incomplete market information, poor product management decision is made that may result in delayed market entry. Second, challenging project management activities such as inefficient communication among project teammates and mishandling complex stakeholder relationships. To gain insight into successful IT innovation project management, a theoretical lens that is able to facilitate the understanding of issues arising from these two causes is necessary. Dominant logic, which can be viewed as both an information filter and routine, fulfills such a requirement and is thus adopted in this study.

Based on the integrated view, a longitudinal case study of a video game project is conducted to address how the dominant logic of the project managers develops and evolves in a successful IT innovation project. The findings are incorporated into a dual layer process model. The first layer encompasses an evolution path which suggests that dominant logic gradually evolves during three distinct phases of the innovation project to ensure its success. The second layer depicts the developmental process of dominant logic in each phase, which is a specific interactive process between information filter and routine mechanisms. Our study complements existing innovation literature by investigating dominant logic from a process perspective and complements dominant logic literature by providing a way of depicting its development and evolution, thus offering overarching guidance on how to manage an innovation project.

Keywords: innovation, dominant logic, information filter, routine, case study

INTRODUCTION

In today's world of accelerating change, corporations are always on a look out for information technology (IT) innovation projects that exploit product-market opportunities [42, 43]. However due to stiff market competition, rapid technological obsolescence and heterogeneous customer demand [40], managing IT innovation projects becomes challenging, hence leading to high project failure rate [18]. In general, the high innovation project failure rate could be attributed to two main reasons. First, owing to incomplete market information, poor product management decision is made that may result in delayed market entry [43]. Second, challenging project management activities such as inefficient communication among project teammates [20] and mishandling complex stakeholder relationships [25].

Past research has suggested that managers' dominant logic in adapting to changes and coping with complex, unpredictable and time-critical issues [11] during IT innovation project is a critical success factor for project development [8, 40]. Dominant logic refers to "the way in which managers conceptualize and make critical resource allocation decisions" [37]. Dominant logic may reflect a manager's cognitive flexibility and adaptive behavior to changes during project which are crucial in managing project complexity and environmental uncertainty [35]. Dominant logic is viewed a funnel that facilitates top management teams in filtering information

based on their experience to form perceptions and a lens that facilitates top management teams in seeing the imaginable future [45]. At the same time, dominant logic is considered a condensation process, in which the manager's shared mindset is gradually condensed into organizational routines and these routines reinforce the dominant logic through a positive feedback loop [4]. Overall, dominant logic can be viewed as information filter and routine mechanisms in dominant logic development.

While the information filter and routine mechanisms are certainly not mutually exclusive in dominant logic development [5], no study has elaborated on how the two mechanisms may interact. It is therefore important to consider the interaction between these two dominant logic development mechanisms. Answering this question is a necessary precondition to understanding dominant logic development process.

Our paper is organized as follows: we begin with a review of dominant logic research. We then present our research methodology and case. Our selected case involves a 6 year game software project (EOT) that was developed by Fuzzyeyes, an Australian multimedia computer game development company. We selected the case because the Australian gaming industry was facing unexpectedly high growth in the market [42] with evolving art and technological trends. The case offers ample opportunities for understanding how managers adapt to an uncertain and changing gaming environment - a useful illustration for dominant logic development. The case presentation is followed by a case analysis. Finally, I present some research and practical implications coupled with future research directions.

THEORETICAL FOUNDATION

Dominant Logic

The concept of dominant logic has evolved over the years. At its early phase, dominant logic was applied to the dominant coalitions or the top management of a (diversified) organization [37], with cognitive psychology as its underlying theory. Later, dominant logic of the entire organization was adopted through "retrofitting" [29] the concept to the theory of complex adaptive systems [3]. Besides, a few researchers have examined evolution of dominant logic. For instance, Von Krogh et al. [45] investigated the change in the "bandwidth" of dominant logic to illustrate its evolution in the telecommunication industry. The "bandwidth" is calculated based on six dimensions contained in dominant logic and they are related to both internal and external environment. Côté et al. [9] perceived a change of

dominant logic from three different dimensions based on an acquisition case. Other researchers focused on changes in "condensed" or "coherence" elements of dominant logic during its evolution [5, 22]. These studies appear to conclude that the evolution of dominant logic involves a three-step process: (1) initially it involves a "fit" between dominant logic and strategic choices; (2) some new strategic choices are made based on the changing conditions, which result in a disturbed "fit" and possible negative performance effects; and (3) revising or adding a new dominant logic to the portfolio to recover the "fit" [3].

In addition, Obloj et al. [31] propose dominant logic to be information filter and routines. Such perception was implied in the original paper where "the dominant logic was considered both knowledge structure and a set of elicited management processes" [37]. The idea of dominant logic being an "information filter" was first discussed in Bettis and Prahalad's study [3], where it directed the management to "sift" relevant information and make strategic decisions. Von Krogh et al. [45] argued dominant logic functions both as a funnel that facilitates top management teams in filtering information based on their experience to form perceptions and a lens that facilitates top management teams in seeing the imaginable future. Similarly, dominant logic is perceived as "mental models" or "knowledge structures" or "set of schemas" [3], which are composed of managers' interpretations of experiences in core businesses and formed after a period of time. In this sense, dominant logic allows managers to analyze data and respond to any emergent uncertain situation efficiently without adopting scientific methods [37]. In other words, managers leverage on their mindsets to selectively scan environments and make timely decisions. Dominant logic can also be viewed a condensation process, in which the general manager's shared mindset is gradually condensed into organizational routines and these routines reinforce the dominant logic through a positive feedback loop [4].

While some studies highlight the information processing function of dominant logic [45], other researchers perceive dominant logic as "routines" in their studies [5, 31]. They adopt this behavioral view because it is extremely difficult to operationalize dominant logic as a cognitive concept [5, 17, 37]. Initially, Grant [17] explored three critical specific corporate-level functions—allocating resources, formulating business strategies, and setting and monitoring performance targets—as reflections of dominant logic. This attempt is based on part of the original definition of Prahalad and Bettis [37], where "dominant logic is reflected in the administrative tools to accomplish goals and make

decisions". Blettner [5] also insisted on a combination of behavioral and cognitive operationalization. Examples of behavioral components are resource allocation [47], embedded administrative processes [22], actions of top management [22], dominant routines and learning experiences [31]. In fact many researchers regarded the development of dominant logic as an interactive process. For example, Bettis and Prahalad [3] in their study argue that current dominant logic will affect the organizational learning activities, which occur at the level of the strategy, systems, values, expectations and reinforced behaviors; the outcomes of these activities would then shape the dominant logic through either positive or negative feedback. These researchers embedded the interactive process in the information filter and routine mechanisms of dominant logic (e.g., [22, 45]), where dominant logic consists of "not only how the members of the organization act but also how they think" [36]. According to Obloj et al. [31], "routines may be an integral component to the formation of knowledge filters, and as structuration theory suggests, these knowledge filters will, in turn, influence subsequent behavior". Nevertheless, none has elaborated on how information filter and routine mechanisms may interact. So far how the two dimensions interact is unknown. It is the aim of this paper to plug this gap in the literature.

RESEARCH METHODOLOGY

Qualitative case study method is adopted because it understands a complex phenomenon in context-specific settings and extrapolates it to similar situations through detailed interviewing and observation [16]. Our approach follows Obloj et al. [31]'s integrative model where dominant logic development is conceptualized both as behavioral and cognitive operationalization. We identified dominant logic from the perspectives of managers' strategic schemas/mindsets and key project activities such as decision making and working procedures. Managers' schemas are shaped by their critical experiences. Their influence is incorporated into the project processes through sense-giving or other managerial activities [19] and reflected in the project's strategy, team values, expectations and reinforced behaviors [3].

Data Collection and Analysis

Data collection started in early June 2011 when we received the 'green light' to conduct in-depth interviews with the CEO and other key managers of Fuzzyeyes. The interview process lasted 14 months. According to our research design, a longitudinal case study was used to map and delineate the interaction between information filter and routine mechanisms of dominant logic development. The data collection emphasized on the inductive derivation of a theoretical model and the validation of the emergent model until data and theoretical sufficiency were reached [33]. Table 1 provides a summary of interviewees' names, designation, interview topics and number of interviews conducted during data collection. Besides the CEO, who was the main source of the project team's dominant logic because of his role as the dominant decision maker, we also interviewed key members of the project team. The guiding questions adopted in our interviews are listed in Appendix A. Altogether, 18 interviews were conducted with the project team.

Table 1: A Summary of Interviewees' Names, Designation, Interview Topics and Number of Interviews Conducted during Data Collection

Name	Designation	Topic	Number of years in company	Number of interviews
Sonny	CEO, Project Manager of EOT	Game industry ecosystem; Organizational culture & structure; Project process; Changes in mindset; changes in the focus of resource allocation; key decisions	>10	11
Miko	Marketing Director	Project process; Marketing activities; interaction among art, technology and marketing departments	9	3
Mick	Musical Director	Music production pipeline; Interactions with art and technology departments;	8	1
Alice	General Manager	project process from general manager's view	>10	1
HR Director	HR Director	HR strategy; internal team management;	7	1
Marketing Assistant	Marketing Assistant	Interactions between art and marketing departments	7	1

Each interview lasted an average of one hour. The interview questions include the initial mindset, mindset changes, strategic focus, key project activities and decisions. All interviews were digitally recorded and later transcribed. Secondary data include industry value chains, organization charts, project processes, press releases and book chapters were also collected.

With the interview transcripts on hand, a combination of temporal bracketing strategy, a visual mapping strategy and a narrative strategy was adopted to organize the empirical data for subsequent abstraction of theoretical constructs. With the selective coding technique [9], data related to strategic choices and main strategic activities were extracted and clustered into three distinct phases based on the CEO's mindset changes in our theoretical model. Specified themes were coded [44], the preliminary model was modified [38, 48] based on observation and categorization of findings [38, 44].

At the same time, I conducted in-depth literature reviews on "dominant logic evolution and development" which facilitated the modification of the structure of the model and the abstraction of theoretical constructs from empirical data. However, the model, existing theories and data did not always corroborate each other. When this transpired, I went through iterative cycles of examining the data and theory to refine the theoretical model, which involved either adjusting the model's structure or adding new constructs [48]. For instance, when I found that the "evolution process" which was supported by data and lacked extensive research in dominant logic literature, I would include this construct in the model. Next, emergent themes were specified and aligned with literature on dominant logic to form a theoretical model. The theoretical model served as the "sensitizing device" [27] to guide the subsequent analysis [13]. During the coding process, we compared the model and the data. When there was inconformity between the codes and components of the model, we would refer to the literature to validate the feasibility of the components and make corresponding adjustments until theoretical saturation was reached [9, 33]. After the interview with the CEO, the refined model was explained to him and he agreed with our model. Other informants narrated their understanding of strategic focus at each phase, their decision making and working routines. Appendix C provides a summary of data collection and analysis process.

CASE DESCRIPTION

Organizational Background

The gaming industry's ecosystem includes manufacturer, publisher, developer, distributor, retailer and customer. As games depend strongly on the consoles, manufacturers enjoy the right to decide whether a new game is eligible for publication. Publishers take charge of selecting a new game for investment, monitoring its production cycle and quality, and finally launching it to the market. Based on their marketing channels, publishers are divided into three categories, i.e., they are European-oriented, American-oriented and Asian-oriented. Developers are teams that produce games. They are categorized into either in-house or independent developers, where the former refers to developers that are affiliated with the publisher/manufacturer, while the latter is not affiliated. Distributors include Wal-mart, 7-11, K-mart and many others. They order games directly from a publisher and sell them to either customers or retailers. Customers can buy games from retailers as well. Fuzzyeyes Studio is an Australia-based medium-sized multimedia software development company which was founded in 2001. It possesses a very flat organizational structure to enhance creativity. It composed of five divisions with a workforce of 50, and its art department being the largest, comprising 30 professional artists. Different from most studios, Fuzzyeyes has its own marketing department and its marketing director has considerable experience in international marketing. Project teams enjoy extensive autonomy in decision making. A project team generally comprises a project manager, a game designer and other members from the Art, Technology and Marketing Departments (Refer to Appendix B for the project structure). Its organizational culture is characterized by innovation, creativity and passion. The CEO constantly commends his staff on their creativity and enthusiasm.

This study focuses on Fuzzyeyes' first AAA title game named EOT. According to Sonny Lu, the CEO of Fuzzyeyes, who is also the project manager of EOT, AAA games are characteristically high investments of US$30~40 million, and of high quality, but involving relatively low risks. The entire project development involved 200 staff from outsourcing software companies for three years, while internal work on EOT lasted about six years. The six-year development cycle was divided into three phases: software design, software production and product marketing.

EOT Development Phase 1: Software Design

In early 2005, Fuzzyeyes invested and positioned EOT as AA title game. A project team was later set up. As almost all the project members lacked experience in developing large-scale games, the project team decided to leverage on their creative professional art team to design the product. The artists first discussed the scope and

philosophy of EOT. Several options of art genres such as "future fantasy", was proposed. The Marketing departments further collected relevant information, suggested alternative options, and assessed their market potential. The "steampunk" genre was finally chosen. The following months witnessed the art team and the game designer jointly brain-stormed to arrive at a concept script. They derived considerable inspiration and enlightenment from architecture and mechanism books. The completed script occupied 1,000 pages. After a great deal of effort in creating the script, the next step was to produce the visible product prototype. The art director presented a stick figure and the character's features to the artists. The artists produced detailed designs using their imagination. In the end, the technology team merged all the components using Gamebryo.

In general, the game design would include the story, its characters as well as their skin color, expressions, clothing and in-game items, etc. These creative ideas were publicly displayed to test the reaction of targeted customers. For example, one appropriate avenue was the ratings of game forums and the team was encouraged by the high ratings. In weekly meetings, the marketing director would provide feedbacks on current trends of character designs to the project team. The continuous interactions between the art department and the marketing department shaped the final prototype. Towards the end of 2006, they attended a game show to source for a publisher. A year later, they successfully signed a contract with a second-tier publisher for the European and American markets. Table 2 provides a summary of the findings that is related to dominant logic.

Table 2: Development and Evolution of Dominant Logic in Phase 1

Dominant logic: provoking creativity
"Before the prototype is sold, creativity is most important. I continuously invest money to make the product creative. I do many things to inspire my team to be confident in producing creative and high quality products. For example, I show my appreciation of their talents at every opportunity by means of posting positive media reports about them. In addition, internal wiki and competitions were leveraged to transfer and inspire creativity among team members." –CEO

Development of dominant logic	
Filtering information on creative trends	"Six months before conceptualization, the marketing department begins studying the trends in video games, to gather information about possible competitors and the targeted customers for the next 5~10 years. These market analyses were applied to sift out creative concepts and test the potential of our next product."–Marketing Director "During the formation of the concept, our focus is on product analysis. For example, we help determine whether the 'fantasy' genre is the right choice and also provide alternative choices. "–Marketing Director
Positioning the product	"According to the market analysis, large scale and creative game projects are usually the ones that earn money. They are also characterized as high-cost investments of high quality, but actually involving low risks. Thus, our decision is to invest in developing large scale and creative games."–CEO
Developing routines for inspiring creativity	"We set up EOT project team. Under the leadership of the game designer and art director, our production team frequented the library for inspiration and produced many good ideas, and they consolidated those emergent ideas from their discussions into a 1000-page script. "–CEO "Discussion and brainstorming occur spontaneously at any time. Our office is equipped with mobile desks and seats, and discussion rooms for convenient communication." –Marketing Director
Clarifying the creative ideas for feasibility analysis	"As the concept becomes more detailed, the marketing team would shift from market analysis to product analysis."-Marketing Director "The artists are not certain as to whether the visual arts are acceptable to the customers and to which segment of customers they seem attractive. They rely on our department to test customers' reactions to a product and facilitate the prediction of its potential." –Marketing Director

Transition process for the evolution of dominant logic
"After the conceptualization stage, we started marketing our products to attract customers. However, the actual purpose was to gain the attention of publishers. Internally, we developed a sales forecasting tool to predict the product's potential revenue. "–Marketing Director

EOT Development Phase 2: Software Production

The software production phase commenced in October 2007, when Fuzzyeyes sold the prototype of EOT to a publisher. After that, the game experienced several development milestones sequentially: alpha version, beta version, release candidate and GM (gold master) release. After the beta version was completed in May 2010, only minor revision was incorporated into the product to gain manufacturer's approval. In the early part of 2008, the production team replaced their technological tool with an industry-recognized tool named Unreal, for AAA video games, based on the agreement between Fuzzyeyes and its publisher. However, as better games were made by using Unreal, the budget increased from US$4 million to US$6 million and then to US$11million. The workload doubled accordingly. To control costs and guarantee efficiency, Fuzzyeyes followed the requirements of the contract closely and outsourced the labor intensive artwork. This is followed by a semi-structured production method named "whitebox". In each production cycle, a more sophisticated "whitebox" would be developed. The outsourcer also started with the original version of "whitebox" after receiving training from Fuzzyeyes' artists for a one-year period. It was not until their "whitebox" was approved by Fuzzyeyes's artists that they were allowed to mass produce.

Since Fuzzyeyes aimed to lower costs, special permission for additional investment had to be sought whenever publisher requested including additional requirement to improve the product. The request was not taken lightly. The publisher had to deliberate on whether further investment would bring about additional benefits. Furthermore, this would also impact the production practices. For example, if the investment was not high enough but many extra requirements were needed, the production team might have to outsource most of the work to reduce costs or lower its quality.

In addition, the production team had to make the game attractive to customers from different cultural backgrounds. The marketing team played an important role in making this possible by acting as the interface between internal production and external customers. They screened customers' particular requirements and shared these with the production team through weekly meetings. The production team would incorporate such specifications into their design through fine-tuning the product. Table 3 provides a summary of the findings that is related to dominant logic.

EOT Development Phase 3: Product Marketing

After Fuzzyeyes had signed the contract with its publisher in 2007, the publisher's marketing team (Team A) took over the promotion of EOT in the European and American markets. The internal marketing team (Team B) collaborated with Team A, and at the same time, they also planned and explored new market opportunities on their own. Their marketing activities began in September 2008. They employed the following three strategies in exploring market opportunities. Firstly, they had already planned to explore the Japanese market independently even before the prototype was sold out. No significant action ensued until the Tokyo Game Show in September 2008. This is mainly because the Japanese publishers prefer high quality products and are unlikely to sign a contract till the product is perceived to be of a good quality. In the package they submitted to the show, they applied for Japanese certification, i.e., the CERO rating. In the show, mini public release, fantastic screenshot and media interview were adopted to attract customers. As a result, they received considerable attention from customers and publishers. Many Japanese publishers contacted them. Given their efforts to retain and reinforce relationships, they finally signed a contract with a Japanese publisher at the end of 2009. Secondly, to enlarge Fuzzyeyes's influence in the Asian market, they leveraged on many other marketing techniques. For example, they continuously visited Taiwan two days before each event. They gave a series of talks centered on a topic at several universities and produced story-by-story press releases. Thirdly, ICT trade fairs such as CeBIT were also in their consideration. They bundled EOT with the ICT products to market EOT, thus paving the way to sell EOT to PC, PS/Xbox as well as smartphone users in the near future.

In addition to exploring opportunities around the product, they were able to take advantage of opportunities around IP as well. Unlike most development studios, EOT's IP is controlled by Fuzzyeyes, allowing them the freedom to deal with IP-relevant issues. Generally, the internal marketing team extracted value from not only the product but also on IP in the "marketing" phase.

In 2012, the Fuzzyeyes studio finally delivered the exciting product to the publisher on schedule and within the budget. According to the online scoring and feedback from the game show, EOT is expected to be well-received. Barring accidents, the product is to be launched on the market soon. Table 4 is a summary of the findings related to dominant logic and the project outcome.

Table 3: Development and Evolution of Dominant Logic in Phase 2

Transition process for the evolution of dominant logic	
"During negotiations, the publisher provided us with a license for Unreal and requested that we adopted it as a technology tool. In fact, Unreal is the recognized tool for AAA games. It is able to lower the risks of failure by pushing our product from an AA ranking up to AAA. Therefore, we switched production to work with Unreal for market recognition and a lower workload. But the truth is that our workload doubled as the expectations of product quality increased."–CEO "Our production team faced the pressure of meeting contractually agreed performance targets. Limited human resources became the main obstacle for maintaining productivity."–CEO	
Dominant logic: gaining profit	
"After the contract is signed and money was received from the publisher, we constrained our creativity within the box and only conducted production activity to fulfil the specific requirements in the contract. Creativity is mainly engaged to make a product attractive to the customers. To keep a tight budget, I would decline most of the publisher's requests for additional requirements unless the publisher chose to pay for the work. In addition, we leverage on outsourcers to deal with labor intensive art work so as to lower costs and improve production efficiency. Overall, we try to maximum our profitability within the conditions of 'acceptable creativity'." –CEO	
Development of dominant logic	
Filtering information on market recognition and successful production practices	"The marketing department consistently checks on whether the product from the creativity department has positive effects towards the targeted customers. We also disseminate regulations and practices specified to certain countries and cultures. For example, no sexually provocative material is allowed in the US and the color of blood in a Japanese show cannot be red." –Marketing Director "To achieve low cost, outsourcing is popular."–CEO "To select our outsourcing partner, we need to evaluate all potential companies (from Japan, Russia, China, etc.). We compared their reputations and decided who has the most appropriate fit in satisfying our productivity requirements."–Marketing Director
Mixing new production processes with the old	"To obtain content approval in each country and gain market recognition, our production team would continuously fine-tune the product by incorporating relevant specifications."–Marketing Director "Initially, our art director was strongly against outsourcing. I persuaded him to try to outsource the least important part of the art work adaptively. In the end, we successfully outsourced 70% of the art work." – CEO
Developing routines for gradually increasing creativity and internally resolving difficulties	"'Whitebox' was the method we adopted to develop video games. We developed a basic 'whitebox' as a prototype. After signing the contract with the publisher, the main direction would not be changed anymore. The production team would add some creative elements into the design by making more detailed versions of the 'whitebox'. The outsourcers started from the basic 'whitebox' and followed the same procedure as well." –CEO "The production teams are effectively self-educated and they can solve most problems using their own methods. When there are conflicts among technical people, artists and game designers during production, they would coordinate with each other to figure out a solution. "–CEO
Balancing creativity and extra investment	"To some extent, the producer substituted my role in his struggle on whether to invest more money. He wanted to make the game more creative and attractive but he was worried about whether the increase in final revenue would be worth the investment. I remembered he had persuaded his company to add about a million dollars to produce a better product." –CEO
Transition process for the evolution of dominant logic	
"At one conference during the production of the alpha version, we had an opportunity to promote our product and build a relationship with the attendees during the one-day meeting. These attendees consisted of journalists, developers and publishers, who facilitated our subsequent marketing activities such as outsourcing the promotional trailer. "–Marketing Director "Before the completion of the product's alpha version, we publicized it at the Japan Tokyo Game Show in September 2008."–Marketing Director	

Table 4: Development and Evolution of Dominant Logic in Phase 3 and Project Outcome

Transition process for the evolvement of dominant logic	
"There is one deal that was beyond expectation. A film producer saw our trailer on YouTube.com and contacted us to ask to buy the IP of the game. To emphasize, IP is ours solely and we can do anything without interference from the publisher."–Marketing Director "The previous marketing activities for different events have given us a good reputation and expanded our influence. Some other publishers have contacted us regarding the signing of contracts for our subsequent sequels."–CEO	
Dominant logic: maximizing profits and influence	
"There are two marketing operations: one comes from us and the other from the publisher, who is responsible for product promotion in the European and American markets. Our marketing team planned and explored opportunities at the Tokyo Game Show (September 2008) to find publishers for the Japanese market. We also presented many other activities. Basically, all the marketing activities are purported to improve profit margins. For the Asian market, we have another important purpose, which is to build our company's reputation. By attending these shows we also project to the publishers that Fuzzyeyes is financially and operationally sound, and in this way, we expand the company's influence. By means of our by-products, we have access to many other businesses around EOT." –CEO	
Development of dominant logic	
Filtering information on possible opportunities	"Since 2003, we have attended various shows yearly for varying purposes. Most are targeted at customers while some others provide a platform for bonding with publishers and developers."-Marketing Director "First, we waited for the best opportunity to explore the Japanese market, based on our foreknowledge. Second, we attended Germany's CeBIT show in 2009, which as an ICT products trade fair, enabled us to facilitate our multi-platform extensions to the PC、PSP and the mobile phone. Third, we knew that Taiwan has a policy of encouraging the entertainment industry and we built good social relationships there. Thus, we were able to market our products in Taiwan." –Marketing Director
Prioritizing potential marketing activities and preparing for feasible ones	"Every year, I have a list of important marketing activities. According to priority, I will coordinate my marketing team to complete the activities on time." –Marketing Director "In weekly meetings, directors from every department spend a whole afternoon making decisions and plans to solve various issues. For example, I might propose a request for marketing support. After the discussion, we assign tasks to specific groups, and sometimes we seek help from outsourcers, and prepare an agenda that helps us to complete the tasks. " –Marketing Director
Developing routines for gaining reputation and making extra profits	"To achieve smooth cooperation between the marketing and production teams internally, we have a common view that the marketing task is an extra task and should not influence the production schedule. There are also situations when some staff members commit time to provide support before and during important marketing activities, e.g., the CeBIT show" –Marketing Director "We have several successful marketing activities in the Asian markets. In Japan, we prepared a special booth to promote EOT leveraging on target customers' behavioral information and our accumulated knowledge of Japan. As we successfully attracted customers and publishers that day, we had opportunities to communicate with most publishers for the Japanese market. For the purpose of building a reputation in Taiwan, we stayed in Taiwan several days before attending each marketing event. Our art director and other team members gave talks to several universities. In addition, three important news mediums continuously reported on our events to sustain our influence. " –Marketing Director
Strengthening product influence for new opportunities	"A good entertainment product sells itself. As our influence grew, people, including publishers, distributors and manufacturers, approached us and bought our product and its IP. " –CEO "We devote attention to retaining our relationships with these people. For example, our publisher in the Japanese market is a Buddhist. I will talk about Buddhism with him to reinforce his incentive to collaborate with us." –CEO
Outcome: Project Success	
"I think EOT is the most exciting project that I have ever participated in." –Music Director "The project is a total success in that we have enjoyed the process and also made substantial profits. We have finally delivered the product to the publisher and will see it in the market soon." –CEO	

DISCUSSION

Based on the emergent pattern from our data and prior theoretical underpinnings, I inductively derive a dual layer process model of dominant logic (refer to Figure 1). The first layer simply delineates the evolution path of dominant logic that leads to project success. The second layer complementarily delineates the interaction between information filter and routine mechanisms of the dominant logic development process.
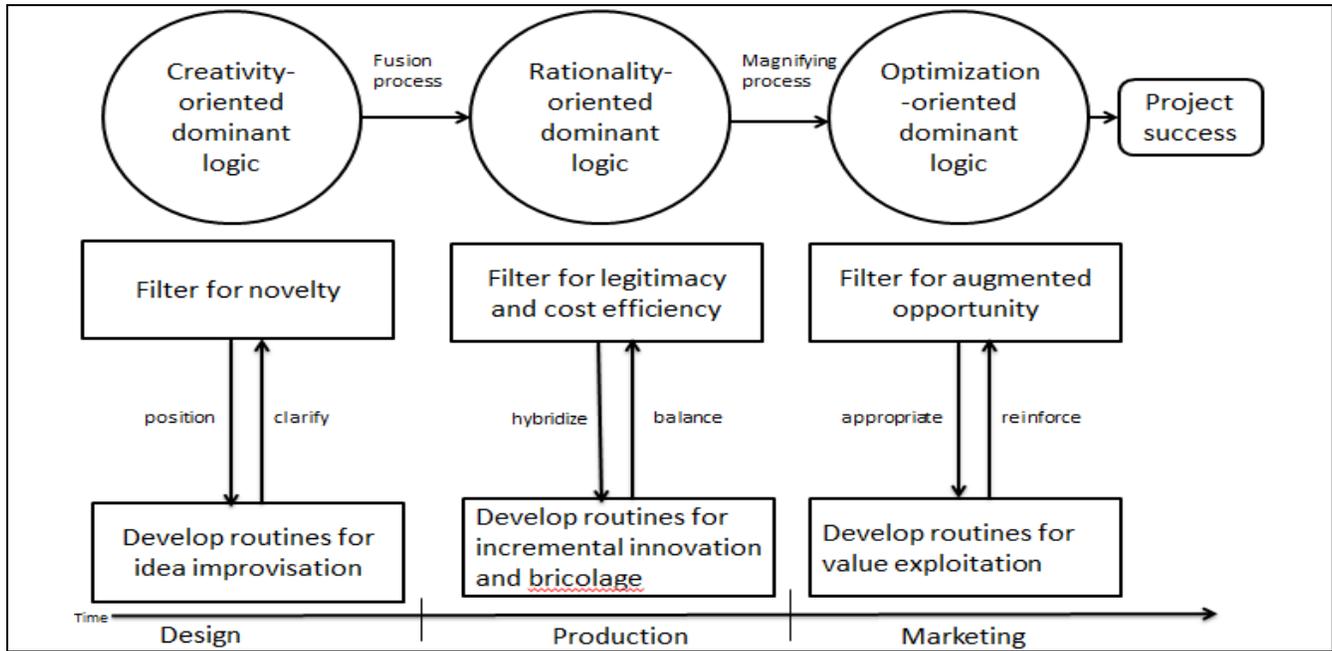

Figure 1: The Development and Evolution of Dominant Logic in EOT

According to our model, three dominant logics were seen in our project to emerge sequentially, and finally led to project success. The evolution path of dominant logic evolved from creativity-oriented to rationality-oriented and to optimization-oriented. This evolution path is well supported by innovation literature. In any innovation project, managers' dominant logic is influenced by two paradoxical forces. One is the maximization of creativity while the other is to achieve the completion of the project within the budget and time frame as well as to increase profits [18, 34]. The tension between these factors makes it difficult for managers to act appropriately. As a solution, managers would vary their strategic focus on different activities over the course of time [34].

At different phases, the managers' dominant logic falls in between paradoxical forces with a tendency towards one force. The tendency represents the orientation of dominant logic [32]. In the software design phase, the tendency is towards a creative force [7]. In the software production phase, the forces of productivity and profitability draw the manager's dominant logic towards the opposite direction [7]. In the product marketing phase, the requirement for creativity decreases to a minimum along with innovation, as completion time draws closer. The forces of productivity and profitability further influence the managers' dominant logic towards maximizing the gross gains from the innovation. The evolution path can result in project success because the final product fulfils the requirements from the two paradoxical forces, where the innovation should possess reasonable creativity, and at the same time, keep the costs under control while resulting in considerable profits.

The fusion and magnifying processes identified in the EOT project are empirical illustrations of the three-step evolution process proposed by Prahalad and Bettis [37], where dominant logic and strategic choices which initially fit, but with the changing environment triggered off "unfit" strategic choices. Finally, the fit state is recovered through revising the dominant logic.

Comparatively, the differences between the fusion process and magnifying process rests on how a dominant logic is "revised", and which is correlated with the relationship between old and new strategic choices. Next I will explain the development of dominant logic in detail.

DEVELOPMENT OF DOMINANT LOGIC

Creativity-oriented Dominant Logic and Its Developmental Process

In the design phase, creativity-oriented dominant logic is necessary. All innovation projects begin with the exploration of a new idea. The gaming industry is characterized by the expectations of creativity and innovation [6]. The goal of the first phase of an innovation project is to produce a primitive prototype with inherent originality that will be prevalent when the innovation comes into the market. Thus, it is imperative that the project team strongly concentrates on creativity when conceptualizing and making critical resource allocation decisions and this is defined as "creativity-oriented dominant logic" [32, 37].

Based on the integrated operationalization of dominant logic both as an information filter and routines [31], we summarize the data to posit that creativity-oriented dominant logic is composed of an information filter for novelty and routines for idea improvisation. The former refers to the function of searching for information related to innovation opportunities and evaluating their degree of novelty when making decisions [3, 46]. An information filter for novelty is a must as it facilitates managers in investing resources in the appropriate innovation. Without it, the prototype is very likely to be constructed based on ideas that are about to be outmoded or that are appealing to only a limited cohort of consumers, which will lead to the ultimate failure of the innovation [43]. The latter, routines for idea improvisation, refers to the reflection of dominant logic in key routines where new ideas are encouraged to be devised through "deliberate creation of novel creativity" [11, 17]. The routines enable the project team to add originality to a prototype to the best of their ability. Without it, the ultimate prototype would lack creativity and it would be responsible for the failure of an innovation project.

In addition, previous research findings have implied that creativity-oriented dominant logic is developed after continuous interactions between filtering for novelty and developing routines for idea improvisation [4]. From our findings, the interaction

process follows a specific pattern. First, it is to filter information to distinguish which novel idea has the potential to command future markets [46]. Second, filtered information facilitates managers to explicitly position the new product, where the position sets the direction for the subsequent routine development. Third, routines for invoking needed creative ideas through improvisation are developed [4] because improvisation is an effective innovation method for producing free-flowing creativity [11, 14, 24]. Fourth, what to filter next for novelty is clarified along with the production of new and more detailed concepts or prototypes in the last step [4]. The interaction continues until the end of the design phase of an innovation project, where the prototype is finalized.

Fusion Process

Dominant logic remains unchanged as long as it "fits" strategic choices [3]. However, when changing conditions require managers' new strategic choices that conflict with existing ones and when both are necessary, a "fusion process" that transforms current dominant logic to another occurs. The process encompasses a gradual integration of new elements into old dominant logic at the expense of unlearning some parts of the old logic. The key in successfully managing this process is to find a balance during the mutual compromise made between the contradictory strategic choices.

In the intermediary stage between the "Software Design" and "Software Production" phases of the EOT project, the pressure to find a publisher triggered a change in the managers' mindset [4]. Most strategic choices are aligned with creativity-oriented dominant logic in the "Software Design" phase, where the project team sets little boundaries towards how to innovate and encourage free-flowing creativity [7]. However, new strategic choices, such as compromising creativity to manufacturer's requirements for concept approval and replacing technology tools to gain market recognition, were made for the purpose of obtaining funds from the publisher [23]. These new choices resulted in constrained creativity and a significantly increased repetitive workload was inflicted on the artists. To resolve their conflicts regarding creativity-oriented dominant logic, the project team gradually accepted the constrained creativity by clarifying the boundaries of innovation and leveraging on outsourcing to release their artists from labor intensive work [7]. These rational elements, which enhance productivity and profitability [45], were mixed into the creativity-oriented dominant logic with the dissolution of some creativity elements [3]. This continued until the project reached a reasonable balance between creativity

and rationality [45]. The rationality-oriented dominant logic finally took shape, and was aligned by new strategic choices [3].

Rationality-oriented Dominant Logic and Its Developmental Process

In the software production phase, rationality-oriented dominant logic replaces creativity-oriented dominant logic. Two principal concerns, which are external requirements and internal resource constraints, dominate the software production process [21]. To respond to them, managers adjust the focus towards complying with external environments and increasing production efficiency and effectiveness. Formal processes were introduced to the project team to ensure that the team could deliver the product on time and within the specified budget although this clashed with free-flowing creativity [7]. This is theorized as "rationality-oriented dominant logic" because managers focus more on profitability than creativity in conceptualizing and making decisions [32, 37]. In innovation projects, rationality refers to "the predominant focus on business interests or the productivity-oriented production process, usually at the expense of creativity" (adapted from Tschang [45]).

Rationality-oriented dominant logic also consists of two components. One component is the information filter for legitimacy and cost efficiency [31]. It refers to the function of rationality-oriented dominant logic for collecting institutional information (legislation, regulations, norms, and standards) [15] and information on applicable solutions that can lower costs and increase efficiency [46]. The institutional information has an important role in decision-making on how to revise an innovation for market recognition, because an innovation would not be allowed to enter a market until it undergoes sufficient revision. The information on applicable solutions assists managers in deciding which solution to adopt and how it can be done. The adoption of an appropriate solution would significantly increase the possibility of completing an innovation within the specified budget and delivering it on time, and simultaneously reducing production pressure and failure risks. The other component is routine for incremental innovation and bricolage [31]. This refers to the reflection of rationality-oriented dominant logic in two main routines. The incremental innovation routine enables the avoidance of free-flowing creativity and boosts iteratively increasing creativity in established boundaries [39]. Without the incremental innovation routine, the project costs would easily run out of control and the schedule would lag due to the introduction of redundant creativity. The bricolage routine is meant "to solve problems with

whatever they have at hand" [41]. Without this routine, the project team will have to cultivate new capabilities or buy new tools for problem solving. In such a case, consumption of time and money would be increased.

Moreover, in the software design phase, previous research implies that the development of rationality-oriented dominant logic is a continuous interaction process between filtering for legitimacy and cost efficiency and developing routines for incremental innovation and bricolage [4, 31]. From our findings, the interaction process follows a specific pattern. First, scattered institutional information is collected to facilitate understanding of the external requirements for achieving legitimacy [21, 46]. At the same time, information on successful practices for cost efficiency is collected [46]. Examples of such practices are outsourcing [2] and bricolage [41]. Second, the two types of information should be hybridized into the existing prototype or production process respectively, thus providing direction for the subsequent routine development.

Third, incremental innovation routines are developed for the convenience of adding scattered institutional information and incorporating cost-efficiency practices [39]. In the case of the EOT, the project team continuously absorbed the content norms through fine tuning the innovation repeatedly and the team also successfully introduced outsourcing into the software production process, where the prototype was continuously improved first by the internal team and then by an external team. Furthermore, bricolage as a cost-efficiency practice is developed to deal with resource constraints [41]. Two forms of collective bricolage - familiar and convention-based - are commonly found in an innovation project [12]. In the former, each staff member leverages on self-educated skills to solve emergent issues and enriches the knowledge repertories through sharing with those in the same department. In the latter, staff from different departments exchange their ideas on common issues and collectively determine and execute the solutions [12].

Fourth, the results of the above-mentioned routines exert their influence on information filters for legitimacy and cost efficiency through balancing resource allocation for creativity and that for business interests or productivity [4, 45]. The balance is crucial to the success of an innovation project because it balances the tensions between creativity and rational interests [34, 45]. When the production routine leads to unbalanced results, an adjustment will be made to recover the balance. For example, our research data revealed that the publisher increased investment to encourage creativity when the rational production process tended to become too restricted for creative practices such as impromptu actions

or serendipitous discovery [45]. The interaction process continues until the end of the production phase of an innovation project when the innovation is ready for launching.

Magnifying Process

Dominant logic is related to path dependence and sensitive to early conditions [3]. Specifically, a new dominant logic is an augmentation of the previous one when managers' strategic choices emerge from evolving environments and are concordant to existing ones with intensified or amplified tendencies. This evolution of dominant logic is theorized as a "magnifying process", which encompasses gradually enlarging old dominant logic by adding new elements. The key in successfully managing this process is the adding of as many new elements as possible. A magnifying process appears in the intermediary stage between the "Software Production" and "Product Marketing" phases of the EOT project.

The strategic choices in the "Product Marketing" phase were influenced by the rationality orientation in the "Software Production" phase (e.g., [22]). Following the strategic choices made towards business interests, the project team made new strategic choices to further explore and exploit the value of the product in a new market and the value of IP in a similar industry when EOT was approaching completion. The "value" here refers to not only visible profits but also some invisible values such as reputation [28]. As rationality-oriented dominant logic failed to align with these new strategic choices, new elements of dominant logic, including an information filter for augmented opportunities and routines for value exploitation, were added to amplify the dominant logic towards capturing as much additional value as possible [3]. Along with the consecutive success in selectively implemented marketing events, the optimization-oriented dominant logic gradually substituted the rationality-oriented dominant logic.

Optimization-oriented Dominant Logic and Its Developmental Process

The product marketing phase is characterized by optimization-oriented dominant logic. Major development tasks should have been completed at this phase and the marketing department assumes leadership in assisting the product launch [34]. As the commercial success of an innovation is indicated by its popularity and the amount of value extracted [34], the strategic focus of this phase is to take full advantage of the innovation to capture as much value as possible through various marketing activities. Managers would conceptualize and make critical resource allocation decisions towards maximizing the value captured and this is defined as optimization-oriented dominant logic [32, 37].

Optimization-oriented dominant logic consists of an information filter for augmented opportunities and routines for value exploitation [31]. The former refers to the function of searching for new commercial opportunities and evaluating their potential benefits (e.g., [4, 31]). The information filter for augmented opportunities has a pivotal role in facilitating managers in discovering various opportunities. Without it, the final profit of an innovation may be diminished to even less than the cost of the investment because many good opportunities were missed. The latter refers to the reflection of dominant logic in various routines where the project team applies new external knowledge commercially to capture values [17]. Routines for value exploitation enable managers to gain benefits from the innovation. Without it, the new product may even fail to enter the market.

In addition, at the product marketing phase, the development of optimization-oriented dominant logic results from the continuous interaction between filtering for augmented opportunity and developing routines for value exploitation (e.g., [4, 31]). From our findings, the interaction process follows a specific pattern. The first step is to filter information on new opportunities that have potential to provide additional benefits [46]. Then, the comparative analysis among these new opportunities enables managers to appropriate necessary resources for some opportunities that can be supported by internal teams. Third, to exploit values from such opportunities, corresponding routines are developed. For instance, in the EOT project, the preparatory work for marketing events, which comprises trivial matters, was usually assigned to internal teams as temporary tasks. When necessary, virtual teams, composed of staff from different departments, were built to fully support an event. Tasks beyond the capability of internal teams were dealt with by agents. Fourth, an information filter for augmented opportunities is significantly reinforced along with the extension of brand influence and social influence from the success of marketing events [4]. The interaction continues until the end of the marketing phase when the potential value of the innovation has been mostly extracted and the focus of the production team shifts towards another innovation.

CONCLUSION

Theoretical and Practical Contributions

In this study, a dual layer process model manifesting the development of dominant logic is derived

from the managerial experience of a successful video game project. By addressing the research question set out at the beginning of the paper, this study contributes to dominant logic and IS literature in three ways. First, our theoretical model highlights the nature and type of dominant logics needed for project success. For example, creativity-oriented dominant logic is manifested when all critical resource allocation decisions are conceptualized and made for the purpose of creativity, and the logic is composed of information filters for novelty and routines for idea improvisation. Second, our study explains how information filter and routine mechanisms interacted during dominant logic development – an important area that so far no study has examined and enhances understanding of dominant logic development process. Third, our study supplements existing innovation studies on critical success factors and effective innovation mechanisms through (1) adopting a process view and (2) introducing dominant logic as a new theoretical perspective

For practitioners, this paper provides several significant insights. First, in order to achieve project success, managers' dominant logic should evolve during an idea-to-launch innovation process to ensure that the creativity of the final product is at a reasonable level and its profitability is maximized [18]. Our model provides guidance for managers to design the strategic focus of each phase and make strategic adjustments at different phases to direct the project team in coping with changes in the environment. Second, to embed a specific dominant logic into the team, managers can manipulate the developmental process by introducing appropriate information filters and routines to the project team. Besides long-term innovation projects, this is also applicable to short-term projects without emphasizing the stabilization of dominant logic. For example, dominant logic in the evolution path only exists in a short interval with the corresponding information filter and routine development temporal behaviors. Our findings may also be useful to start-up firms because entrepreneurial activities share similar processes and characteristics as an innovation project. Specifically, the entrepreneurial activities consist of three phases: (1) the preparation of a business proposal for procuring investments emphasizes creativity; (2) the implementation of the business proposal emphasizes cost control and profitability; (3) the extension of the business emphasizes optimization of the profits and other benefits.

Limitations and Directions for Future Research

One limitation in our study includes the restrictions of a single case study in terms of statistical generalization or external validity [48]. However, as the findings of our study are empirically grounded in a real project and also corroborated by most established work in innovation project management and dominant logic literature, they are certainly generalizable to other similar contexts. In other words, the single case study in our study possesses the property of "analytical generalizability", which means it can be used to "generalize a particular set of results to some broader theory" [49]. Two caveats exist with regards to generalizing the results. First, the findings are generalizable to radical product/service innovation projects that follow certain stages similar to the case project. For those incremental innovations, since the purpose is to leverage on existing resources for maximizing the benefits, the dominant logic is most likely to be constant during the project. Second, this research is conducted based on an innovation project in an entrepreneurial organization, and thus may not be applicable to projects in corporations (or joint venture projects). Compared to a project team that encompasses all employees of an organization which enjoys great autonomy in decision making as well as many other activities, project teams in large organizations are influenced by various factors including complex organizational structure, culture and top management's dominant logic. As a result, the evolution path of dominant logic in large organizations can be very different. For example, rationalization may not be an issue in a situation of sufficient resources [26]. For the second caveat, it will be fruitful to conduct a comparative analysis between innovation projects in large and entrepreneurial organizations to manifest the differences.

Furthermore, this study aims to decipher the evolution and development of dominant logic in ensuring project success, yet the same research question remains unaddressed at the organizational level although dominant logic is one key factor in the success of a new venture [30]. Future research in this stream is strongly encouraged at the organizational level. A gap remains in how to manage dominant logic evolution as conflicts exist during the evolution process. Hence, it is a meaningful future goal to examine the effective mechanisms in managing dominant logic evolution.

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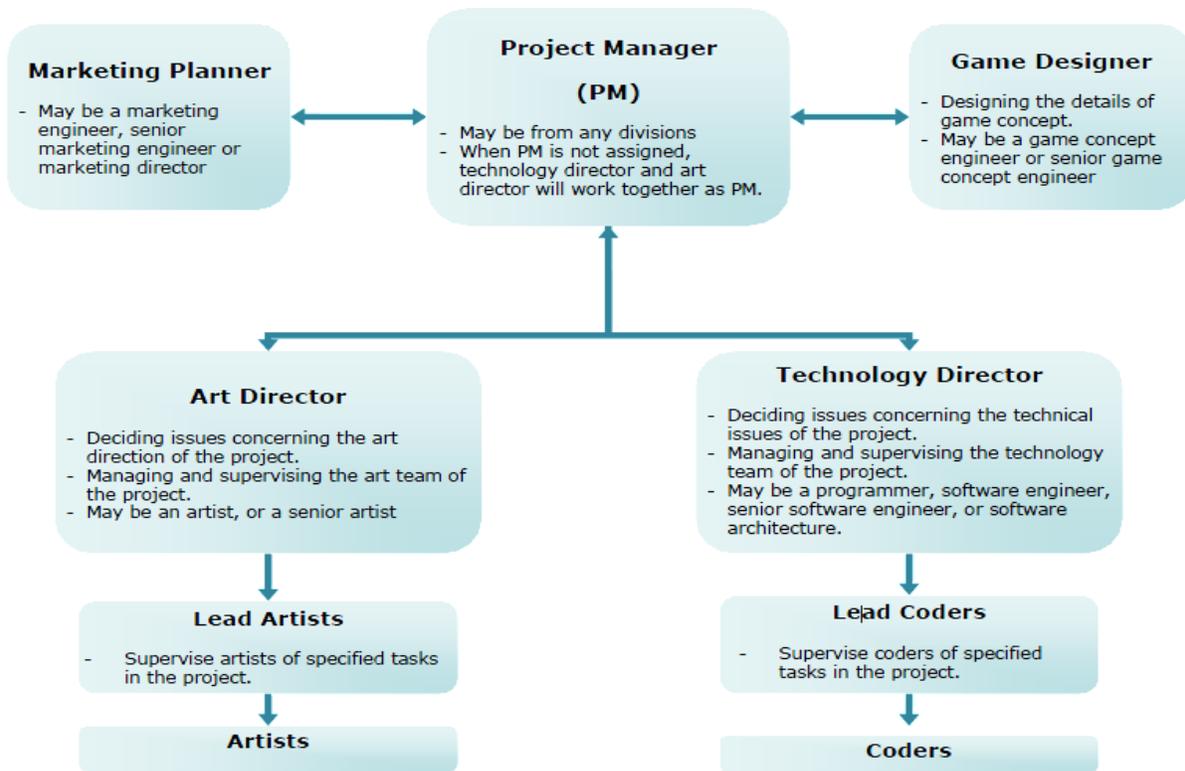
APPENDIX A

Sample Interview Questions

1.	What are your basic views of your business strategy and the industry?
2.	Do you consistently have the same mindset throughout the project? If, the answer is 'no', how does your mindset change throughout the project?
3.	Which manager has a similar mindset to yours during the project?
4.	Please describe the project process and how your mindset influences the project.
5.	What do you think is the project's strategic focus at each phase?
6.	What rules do you follow at each phase?
7.	What is your role in making the key decisions?
8.	Please describe your role in key activities and your work at each phase.

APPENDIX B

Project Structure

APPENDIX C: DATA COLLECTION AND ANALYSIS

	Stage 1: Establish & refine a model			Stage 2: Fine tune & validate the model
Data collection	Step 1: Preparation **Jun 2011** Request for one article regarding the company from the gatekeeper and gather information about the industry **Jul 2011** Informal interview with the gatekeeper	Step 2: Official interview First day Interview with CEO Follow-up interview with CEO and marketing director Collect secondary data	Step 3: Framing	Official interview and validation **Feb~Mar 2012** Interview with four key managers, marketing assistant and music director **Apr 2012** Follow-up interview via e-mail
Data analysis	**Jun 2011** Identify applicable theoretical lens and relevant theoretical gaps	Select dominant logic as the theoretical lens, build preliminary model and design interview questions Modify preliminary model with emergent new themes	Conduct selective coding and cluster data into phases — Modify model structure and abstract theoretical constructs from data via literature review and internal discussions — Refine the model through data-model-theory alignment checks via internal discussions	Conduct selective coding to align data with model Fine tune the model for ensuring data-theory-data alignment
	Jun 2011-Jul 2011	**Jul 2011**	**Aug 2011-Jan 2012**	**Feb 2012-Aug 2012**
Reliability Insurance	-Prepare a document with conclusions on relevant theoretical lenses and a set of interview questions to guide official interviews.	-Prepare a set of interview questions before each interview, which are explorative, open-ended and tailored to the role of the interviewee		-Prepare a set of interview questions before each interview, which are explorative, open-ended and tailored to the role of the interviewee
Validity Insurance		-Set up an interview panel of multiple researchers with different roles: with one handling the interviews while the others take notes, ask for clarification if necessary and compare interpretations later -Gatekeeper provides her interpretation of key information as triangulation	-Present models to a panel of researchers and practitioners, also ask the gatekeeper to give feedback -Ensure emergent models and final findings are supported by literature	-Set up an interview panel of multiple researchers with different roles: with one handling the interviews while the others take notes, ask for clarification if necessary and compare interpretations later -Collect multiple sources of data to avoid the potential bias of "dominant voices" in the case reporting -Present the model to researchers and practitioner to get feedback -Ensure data-model-theory alignment