Eleven Role Types of Middle-Level Design Managers in Korea: Different Patterns by Design Functional Groups

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Abstract

Background Middle-level design managers (MLDMs) hold important positions as these managers are involved in the first stage where strategic or human relations tasks (namely, non-practical design activities) surpass the operational activities of design practice. Hence, MLDMs can confront the challenge of performing different kinds of roles and functions from those of practical design. Given the significance of MLDMs, this study aimed (1) to identify various role types of MLDMs in a qualitative way and (2) to compare the role types according to different functional groups.

Methods In-depth interviews were conducted with 12 MLDMs affiliated to in-house design organizations of major Korean companies. The MLDMs belonged to different design-oriented functional groups from front-end to back-end product development activities. Interview data was qualitatively analyzed using combined grounded theory and framework analysis to identify MLDMs' roles and their characteristics by code links and code co-occurrences using Atlas.ti.

Results Fourteen functions were identified under the four categories of the management function (i.e., planning, organizing, leading, and controlling). Also, 11 role types of MLDMs were identified and classified according to the involvement types of middle management in strategy. Moreover, each design functional group demonstrated different presence of roles and distinctive priority patterns of roles.

Conclusions The value and contribution of this study can be found in two aspects. First, the professional contribution is the establishment of customized competence development guidelines for MLDMs based on their roles and functions, which could serve as a career path guide or a human resource management guide. Second, the academic contribution to the design management field is the highlighting of the underestimated importance of MLDMs' roles, which could segment a wide spectrum of MLDMs' works into detailed scales and could help determine the particular set of relevant functions or competences.

Keywords Role Types, Functions, Middle-Level Design Managers, Priority Patterns, Korean Case

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1. Introduction

The scope of design activities is expanding as design serves as strategic tools of innovation and product differentiation (Borja de Mozota, 2002; Perks, Cooper, & Jones, 2005; Stevens & Moultrie, 2011). Consequently, complex design management activities are required of design managers who are usually the next career stage of designers. Their activities are diverse ranging from operational ones (e.g., design project and tangible design outcomes of product/service/experience) to tactical (e.g., systems, processes, design organization or teams) or strategic ones (e.g., corporate design, policy, mission, and agenda) (Best, 2006; Chung, 1998; Lockwood, 2010). Like the wide scope of design managers' activities, the hierarchical levels of design managers are varied. In general, managers are classified into three levels such as top, middle, and supervisory managers (Hellriegel, Jackson, & Slocum, 2005; Spencer & Spencer, 1993). Comparably, design managers can also be divided into categories such as design executives (top), senior or project designers (middle), and junior designers (supervisory) (Chung, 2010).

Management research has emphasized the importance of middle mangers as they have strategic functions in terms of leadership and management (Delmestri & Walgenbach, 2005; Floyd & Wooldridge, 2000; Huy, 2002; Metheny, 2013). Moreover, while technical skills are more accentuated for supervisory managers and strategic conceptual skills are more underscored for top managers, middle managers are required to have widespread competences relevant to strategic, human resource, and technical tasks (Daft, 2003; Dance, 2011; Katz, 1974). Namely, all levels of management activities are necessary for one position of middle manager.

However, design management research has not primarily accentuated MLDMs. Most studies have generally investigated the competences of design managers without classifying the top and middle managers such as design expertise, know-how of human dynamics, and knowledge of business practice (Briggs, Green, & Lombardi, 1998; Green et al., 2004; Peters, 2012). Several researches have focused on the functions of design leaders or design executives such as strategic thinking, directing and nurturing creativity, envisioning the future (McCullaph, 2008; Turner &Topalian, 2002), managing business, building relationship, and communicating (Han & Bromilow, 2010). However, scarce research in design management has focused on MLDMs.

Nevertheless, it is worthwhile to highlight MLDMs since they can confront the challenge of performing completely different kinds of functions from those of practical design. In other words, MLDMs could be the first stage where strategic or human relations tasks (namely, non-practical design activities) surpass the operational activities of design practice. Moreover, the target audience of MLDMs is much broader than that of top-level design leaders. With this background, this Research accentuates the significance of MLDMs and their roles and functions. Therefore, the aims of this study are (1) to identify various role types of MLDMs in a qualitative way and (2) to compare the roles types according to different functional groups. To clarify the scope of the empirical study, the operationalized definition of MLDMs in this research was established as follows:

- Their job titles corresponded to MLDMs; for example, by having senior managers, team managers, or deputy managers in their position names. As the roles and responsibilities of middle managers are usually pertinent to project management (Floyd & Lane, 2000; Kanter, 2004), they were limited to those who had experiences of project management.
- They are affiliated to the in-house design organizations of the top 30 major Korean corporations. In Korea, major corporations generally have internal design departments whose sizes are large enough to include diverse hierarchical levels, thus the MLDM positions can be easily identified. As the major corporations normally empower their in-house design organizations to participate in internal strategic decision making (Borja de Mozota, 2003), the MLDMs in those groups could also take part in strategic activities.
- Among the top 30 corporations, the companies leading in highly developed industry sectors in Korea such as IT manufacturing, IT service, and product manufacturing industries were targeted.

The remainder of this article is organized as follows: The theoretical background on the roles and functions of middle managers in management research is discussed before the investigation of the MLDMs' case. Then, the research design and method of conducting the qualitative empirical study and analysis are explained. According to research aims, results and findings determine the role types of MLDMs and compare them according to different functional groups. Finally, the conclusion ends with a summary, research values and contributions.

2. Theoretical background

2. 1. The roles and functions of middle managers in management research

Ahead of exploring the roles of MLDMs, the functions or roles of middle managers investigated in management research need to be identified. Above all, the meanings of function and role need to be defined. Commonly, a role is a position that one gets by its virtue whereas a function is the performance that a role entails ("Difference Between Role and Function," 2011).From the perspective of managers, functions are the responsibilities of a manager including key duties in a job description, whereas roles are the set of expectations for the actions a manager takes to perform various functions (Daft, 2003; Suttle, 2008).

In management research, the functions of management are generally categorized in four ways: planning, organizing, leading, and controlling (Daft, 2003; Dessler, 2004; Koontz & O'donnell, 1972). Each function is defined as follows:

- Planning: defining goals for future organizational performance and deciding on the tasks and resources needed to attain them;
- Organizing: assigning tasks and responsibilities, grouping tasks into departments, allocating resources to departments, and staffing;
- Leading: influencing and motivating employees to achieve the organizational goals;

- Controlling: monitoring employees' activities, keeping the organization on track toward its goals, and making corrections as needed (Daft, 2003, pp. 6-7).

Middle managers in particular hold a semi-executive position, linking top management and supervisory line management (Dance, 2011). Thus, they function as the glue or buffer between top management and lower-level employees (Ryan, 2008). Floyd and Wooldridge (1992, 1994) determined that the role of middle managers is proactive, having both upward (e.g., synthesizing information or championing strategic alternatives) and downward (e.g., facilitating adaptability or implementing deliberate strategy) influences as shown in Table 1. Thereafter, many scholars investigated the strategic value and contributions of middle managers, such as promoting corporate entrepreneurship efforts, selling issues to top management, fostering communication, creating effective working environments, facilitating change, implementing innovation, and ensuring smooth operations (Delmestri & Walgenbach, 2005; Engle et al., 2017; Floyd & Wooldridge, 1997, 2000; Huy, 2001, 2002; Metheny, 2013). The fundamental consensus of those scholars is that middle managers play both management and leadership roles.

Table 1 The involvement of middle management in strategy

Direction	Activities of middle management	
Upward	Synthesizing information	• Gather information on the feasibility of new programs • Communicate the activities of competitors, suppliers, etc. • Assess changes in the external environment
	Championing strategic alternatives	• Justify and define new programs • Evaluate the merits of new proposals • Search for new opportunities • Propose programs or projects to higher level managers
Downward	Facilitating adaptability	• Relax regulations to get new projects started • "Buy time" for experimental programs • Locate and provide resources for trial projects • Provide a safe haven for experimental programs • Encourage informal discussion and information sharing
	Implementing deliberate strategy	• Monitor activities to support top management objectives • Translate goals into action plans • Translate goals into individual objectives • Sell top management initiatives to subordinates

Source: Adapted from Floyd and Wooldridge (1997, p. 467)

Considering the importance of middle mangers playing a wide range of roles, it can be inferred that MLDMs also have an extensive role spectrum stemming from both general management and the specificity of the design domain. Therefore, the roles and functions of MLDMs will be examined according to the research aims.

3. Research method: In-depth interviews & qualitative analysis

3. 1. Semi-structured interviews and sample selection

The identification of MLDMs' roles can be deduced from diverse cases of personal experience in their corporate environments. Therefore, it is necessary to understand MLDMs' real experiences and their opinions in qualitative interviews. Hence, semi-structured, in-

depth interviews were prepared asking basic questions such as one's primary functions, job descriptions, work scope, working conditions and environment, and enablers and barriers to work, in association with one's work experiences.

The selection criteria of the interviewees followed the operationalized definition of MLDMs in the Introduction: the MLDMs' job tittles corresponded to senior managers, team managers, or deputy managers, and they were affiliated to the in-house design organizations of the top 30 major Korean corporations among the IT manufacturing, IT service, and product manufacturing industries. Meanwhile, the major corporations usually divide the wide-ranging activities of product development into different functional groups. So, the functions of interviewees were also classified into one of three representative groups such as (1) front-end focused (e.g., design strategy/planning), (2) intermediate (e.g., UX design), and (3) back-end focused (e.g., product styling/graphic design). Particularly in this study, the classification of those three groups werenamed as "design functional groups" and they were divided from Group 1 (front-end focused) to Group 2 (intermediate) and Group 3 (back-end focused).

Moreover, the major corporations usually separate the design strategy/planning functions into the corporate level and project level since their company size is big enough to differentiate the functional groups of corporate strategy and project strategy. Therefore, the front-end-focused group was subdivided into corporate-level strategy and project-level strategy groups. The final selection of 12 MLDMs is shown in Table 2. Group 2 of IT service was assigned with two samples as UX design usually covers both intermediate and back-end-focused functions in the targeted corporations. The average years of professional experience of all samples were counted as 12.25 years, and their job titles ranged from managers to team managers, team chiefs, general managers, or senior designers.

Table 2 Sample selection for interviews

Industry	ID	Years of professional experience	Department/ Functions	Job title	Design Functional Group
IT manufacturing	ID01	11	Design Management Center/ Design strategy	Manager	Group1–a
	ID02	16	Design Management Center/ Planning	Team manager	Group1–b
	ID03	10	UX Center/ UX design	Manager	Group2
	ID04	10	Home Appliance Center/ Product design	Senior designer	Group3
IT service	ID05	17	UX Strategy Group/ UX strategy	General Manager/ Team chief	Group1–a
	ID06	11	Service Development Team/ Service planning	Manager	Group1–b
	ID07	13	Engineering Team/ Interaction design	Manager	Group2
	ID08	12	UX Development Team/ UX/ UI design	Manager	

Product manufacturing	ID09	16	Design Planning Team/ Design strategy	Team Manager	Group1–a
	ID10	11	UX Center/ Prospective UX	Manager	Group1–b
	ID11	9	UX Design Team/ UX design	Manager	Group2
	ID12	11	Interior Design Team/ (Car) Interior design	Senior designer	Group3

Group1. Front–end–focused design (e.g., design strategy/ planning)

a. Corporate level strategy

b. Project level strategy

Group2. Intermediate design (e.g., UX design)

Group3. Back–end–focused design (e.g., product styling/graphic design)

3. 2. Qualitative analysis: Open coding by grounded theory and code structuring by framework analysis

As the interview data are descriptive, including a broad spectrum of interviewees' experiences and opinions, this study adopted a combination of grounded theory and framework analysis (Lacey & Luff, 2007). Grounded theory is appropriate to grasp meaningful information into relevant codes; framework analysis is favorable to facilitating clustering and categorizing by using the codes of thematic framework from literature as category labels. Accordingly, the interview data were open-coded by ground theory first. Then, several frameworks from literature (e.g., the functions of management (Daft, 2003), the involvement of middle management (Floyd & Wooldridge, 1997), and a competence model for design managers (Kang, Chung, & Nam, 2015) were adopted for use as category labels of code clusters. Meanwhile, the category labels from the literature were continuously refined and adjusted throughout coding processes. Moreover, this research employed Atlas.Ti as a qualitative analysis software based on the software guide by Friese (2014a, 2014b).

During the analysis, two ways of identifying the MLDMs' roles and their relevant characteristics were adopted: (1) code links and (2) code co-occurrence. First, the establishment of relations is possible using Atlas.ti by creating a "link" between any two codes based on the contents of a script, and a network view can be rendered in Atlas.ti based on the created links. Second, if the codes are assigned in the same quotation, namely "co-occurred," then they could have a high probability of relations, which consist of a relevant context together in that same quotation (Friese, 2014b). Therefore, code co-occurrence was also considered to extensively explore probable relations of role types and their properties, using co-occurrence tables among selected codes produced by Atlas.ti (see Figure 1).

In a qualitative analysis through grounded theory, it could be more valuable to increase the validity of a coding scheme reflecting the contents sufficiently and exactly rather than to calculate numerical figures of reliability (Charmaz, 2006; Denzin & Lincoln, 2011). Hence, the list of codes was reviewed and refined by four researchers of design management who examined the code-quotation matches, labeling, and structure of codes. Second, the code links were separately reviewed by two researchers, and those researchers and the author had a workshop to discuss the disagreements of links and to make a consensus point by point.

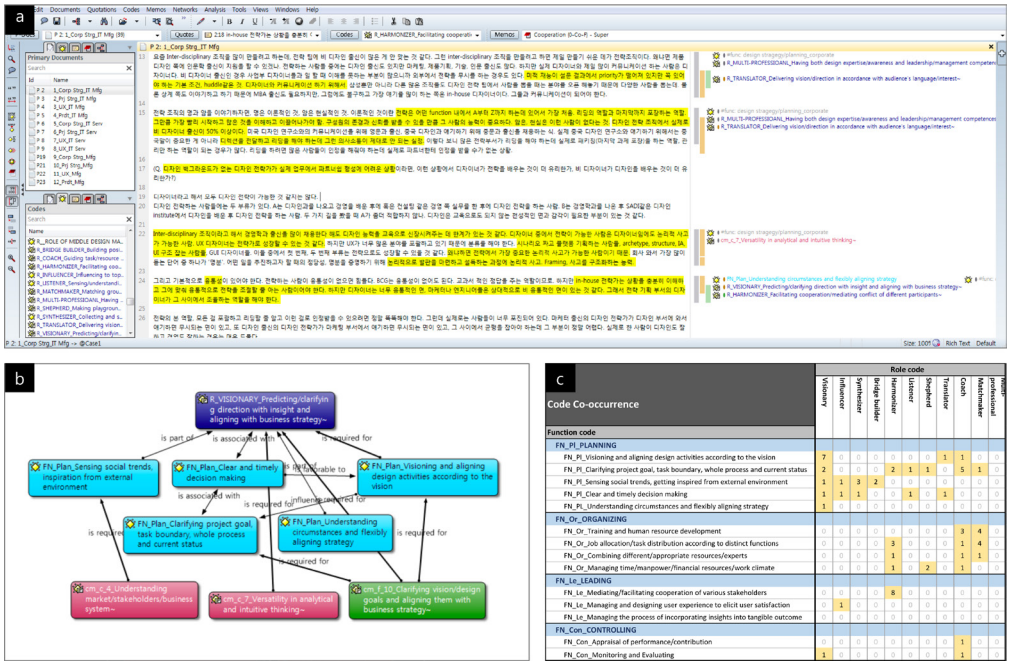

Figure 1 a. Example of open coding by Atlas.ti; b. Example of a network view based on code links; c. Example of a code co-occurrence table

4. Result and findings: Functions/roles of MLDMs and their different patterns

4. 1. Functions of middle-level design managers

The functions of MLDMs could be embraced in the boundaries of four aspects of management that were covered in the Theoretical Background. Therefore, the function codes identified in the analysis were classified according to the four categories with each frequency of mention in Table 3.

Table 3 Functions of middle-level design managers (MLDMs)

4 functions of management (Daft, 2003)	Functions of MLDMs	Freq.
Planning	Visioning and aligning design activities according to the vision	7
	Clarifying project goal, task boundary, whole process and current status	7
	Sensing social trends, getting inspired from external environment	6
	Clear and timely decision making	5
	Understanding circumstances and flexibly aligning strategy	1
Organizing	Training and human resource development	8
	Job allocation/task distribution according to distinct functions	5
	Managing time/manpower/financial resources/work climate	4
	Combining different/appropriate resources/experts	2
Leading	Mediating/facilitating cooperation of various stakeholders	8
	Managing and designing user experience to elicit user satisfaction	3
	Managing the process of incorporating insights into tangible outcomes	1
Controlling	Appraisal of performance/contribution	5
	Monitoring and evaluating	3

In planning, the functions related to visioning and goal setting (i.e., "Visioning and aligning design activities according to vision" and "Clarifying project goal, task boundary, whole process, and current status in the process"), those concerned with sensing and responding (i.e., "Sensing social trends and getting inspired from external environment" and "Understanding circumstances and flexibly aligning strategy"), and "Clear and timely decision making" were categorized.

As for organizing, various activities pertinent to resource management were grouped such as: "Training and human resource development," "Job allocation/task distribution according to distinct functions," "Managing time/manpower/financial resources/work climate," and "Combining different/appropriate resources/experts."

The coordination of people (i.e., "Mediating/facilitating cooperation of various stakeholders") and processes (i.e., "Managing and designing user experience to elicit user satisfaction" and "Managing the process of incorporating insights into tangible outcome") falls under the category of leading (also called as "directing" (Koontz & O'donnell, 1972)). Lastly, in controlling, the functions of "Appraisal of performance/contribution" and "Monitoring and evaluating" were identified.

The frequency of mention could represent at least the degree of relevance to MLDMs' professional practice. Moreover, the 14 functions of MLDMs are well categorized into the broadly accepted four function categories of management not omitting any of them. That is, those functions were identified extensively enough to encompass the four aspects of management functions. Hence, the frequency number can be referred to when comparing the relevance of each function to MLDMs' roles.

In that sense, "Training and human resource development," "Mediating/facilitating cooperation of various stakeholders," "Visioning and aligning design activities according to the vision," and "Clarifying project goal, task boundary, whole process and current status" are the functions with relatively high frequencies. The former two are relevant to tactical level activities, while the latter two are pertinent to strategic level activities. Moreover, most of the other functions are also associated with strategic and tactical levels. This implies that the MLDMs could need to consider strategic and tactical level functions significantly to carry them out, since they are prone to not being well trained in those functions.

4. 2. Roles of middle–level design managers

As previously mentioned, a role is a position that one gets by its virtue and is a set of expectations for the actions a manager takes to perform various functions. During the qualitative analysis, 11 codes for the role of MLDMs were identified as described in Table 4. Detail explanations for each role based on the contents of subordinate quotations are described below with the sourced interviewee numbers.

Table 4 Eleven roles of middle-level design managers

Role		Description	Freq.
1	Harmonizer	Facilitating cooperation/mediating conflict of different participants	29
2	Translator	Delivering vision/direction in accordance with an audience's language/interest	17
3	Coach	Guiding task/resource management considering members' competences and needs	17
4	Listener	Sensing/understanding various statuses and needs of internal members/external partners	14
5	Visionary	Predicting/clarifying direction with insights and aligning with business strategy	14
6	Influencer	Influencing top management's perception, direction, decision making	13
7	Multi-professional	Having both design expertise/awareness and leadership/management competences to understand design works and to direct designers	10
8	Synthesizer	Collecting and synthesizing various information from extensive sources	10
9	Matchmaker	Matching group mission/roles/direction with individual values	8
10	Bridge-builder	Building positive relationships with hierarchical/cooperating/external partners	4
11	Shepherd	Making playgrounds for designers and guiding with appropriate directions	4

Note. The frequency is the accumulated number of mentions in the entire script data, not the number of interviewees who mentioned a respective role.

(1) "Harmonizer" is the most mentioned role for MLDMs during the analysis. A Harmonizer is expected:

- To facilitate cooperation among different departments such as design, engineering, and marketing (*ID 01, 02, 05, 06, 07, and 10*);
- To persuade, to make partners understand, and to elicit consensus among participants (*ID 03, 04, 06, 07, 09, 10, and 11*);
- To mediate conflicts of different participants (*ID 03, 08, and 12*).

(2) A "Translator" works in both vertical and horizontal interpretation including:

- Vertically (downward) translating corporate level and abstract vision/directions into concrete action plans in design language (*ID 01, 02, 05, 08, and 11*);
- Vertically (upward) translating the value of design works and outcomes into corporate level contribution in management language (*ID 05 and 10*);
- Horizontally translating the value of design works into the benefit for partners of other departments according to their interests (*ID 10*).

(3) A "Coach" is expected to carry out such actions as:

- Making subordinates clearly understand the goal, context, boundary, and directions of assigned tasks (*ID 02, 03, 04, and 11*);
- Helping subordinates to learn and develop required competences in accomplishing tasks (*ID 03, 05, 10, and 12*);
- Providing subordinates various opportunities for competence development such as training or education according to their needs (*ID 02, and 03*);
- Appraising contributions of all participants concerning both visible and invisible outcomes (*ID 05*).

(4) "Listener" is a role with expectations that include:

- Sensing and understanding various statuses and needs of internal members/external

partners (*ID 01, 03, 06, 09, 10, and 11*);
- Catching and respecting team members' personalities, interests, strengths, and weaknesses (*ID 03 and 09*);
- Listening carefully to others' opinions with flexibility and open-mindedness (*ID 03 and 06*).

(5) A "Visionary" is expected to accomplish such works as:
- Predicting and clarifying design strategy/directions with macroscopic insight (*ID 01, 05, 06, 09, and 10*);
- Aligning design strategy/directions viably in accordance with corporate vision and business situation (*ID 01, 05, and 11*).

(6) "Influencer" represents a role which is expected:
- To transfer and champion opinions from the bottom to top management (*ID 05, 07, and 11*);
- To influence corporate/product development strategy and direction (*ID 07, and 10*);
- To influence top management's or other departments' perceptions and decision making (*ID 10, and 11*).

(7) A "Multi-professional" is expected to carry out such actions as:
- Having both design expertise/awareness and leadership/management competences to understand design works and to direct designers (*ID 01, 03, 07, 10, and 11*);
- Communicating with and understanding designers, marketers, and engineers (*ID 01*).

(8) "Synthesizer" indicates a role for which the expectations entail:
- Collecting various information from extensive sources (e.g., internal partners, external experts, customers, social trends) and synthesizing them into strategic insights (*ID 01, 05, 06, 10, and 11*).

(9) A "Matchmaker" is expected to accomplish such works as:
- Distributing tasks derived from group mission/roles/direction to well-matched subordinates according to individual values and motivation (*ID 01, 02, 03, 04, 05, 09, and 11*).

(10) "Bridge-builder" means a role which is expected:
- To build positive relationships with hierarchical/cooperating/external partners (*ID 01, 05, and 11*).

(11) "Shepherd" signifies a role in which the expectations involve:
- Providing sufficient opportunities and flexible environments for designers to demonstrate their abilities freely (*ID 03, 04, and 12*); and
- Guiding designers within appropriate boundaries and direction (*ID 03, 04, and 12*).

Middle managers having both upward and downward influences when involved in strategy, as proposed by Floyd and Wooldridge (1992), was previously introduced (see Table 1). Since

MLDMs are obviously middle managers, the 11 roles of MLDMs can be classified according to these categories of involvement as demonstrated in Table 5.

Table 5 Categorization of 11 roles according to the involvement of middle management

Involvement of middle management in strategy (Floyd and Wooldridge, 1992)		11 roles of MLDMs
Upward	Championing strategic alternatives	• Visionary • Influencer
	Synthesizing information	• Synthesizer • Bridge-builder
Downward	Facilitating adaptability	• Harmonizer • Listener • Shepherd
	Implementing deliberate strategy	• Translator • Coach • Matchmaker
	–	• Multi-professional[a]

[a]*The role of "Multi-professional" is a unique role of MLDMs compared to generic middle managers.*

Visionary and Influencer can be classified in the "Championing strategic alternatives" of upward involvement because they propose or influence strategic directions. Synthesizer and Bridge-builder can be classified in the "Synthesizing information" of upward involvement because they are relevant to a series of processes such as relationship building, information collecting from networks, synthesizing information, and forecasting with insights.

On the other hand, in the downward involvement, Harmonizer, Listener, and Shepherd, which can be grouped under "Facilitating adaptability." They are concerned with facilitating cooperation, softening relationships, and providing a flexible environment, hence they work as lubricants or catalysts for running organizations well; namely, they facilitate. The last category of "Implementing deliberate strategy" can embrace Translator, Coach, and Matchmaker. These roles are all pertinent to implementation, such as transferring strategy and direction to the working level, matching appropriate individuals with tasks, and encouraging subordinates for better accomplishment of tasks.

Lastly, Multi-professional is a relatively unique role of MLDMs compared to generic middle managers and was not classified in any upward or downward engagement. It is a precondition for MLDMs to have both design expertise/awareness and leadership/management competences since they need to fully understand design works first in order to direct and manage designers based on this understanding. Therefore, the category for Multi-professional is named in this study "ambidextrous understanding of design and management."

Figure 2 demonstrates a network view of the roles and functions together based on their links established through the analysis. In general, the roles categorized in the championing and synthesizing of upward involvement (i.e., Visionary, Influencer, Synthesizer, and Bridge-builder) are primarily relevant to the functions of planning. Visionary appears to be the primary role covering most of the planning functions, and other upward roles could be considered as supportive and preceding to Visionary. Since the upward involvement

that would impact strategic decisions can frequently occur at the front-end of project management, namely the planning, Visionary, Influencer, Synthesizer, and Bridge-builder roles would be pertinent to planning functions.

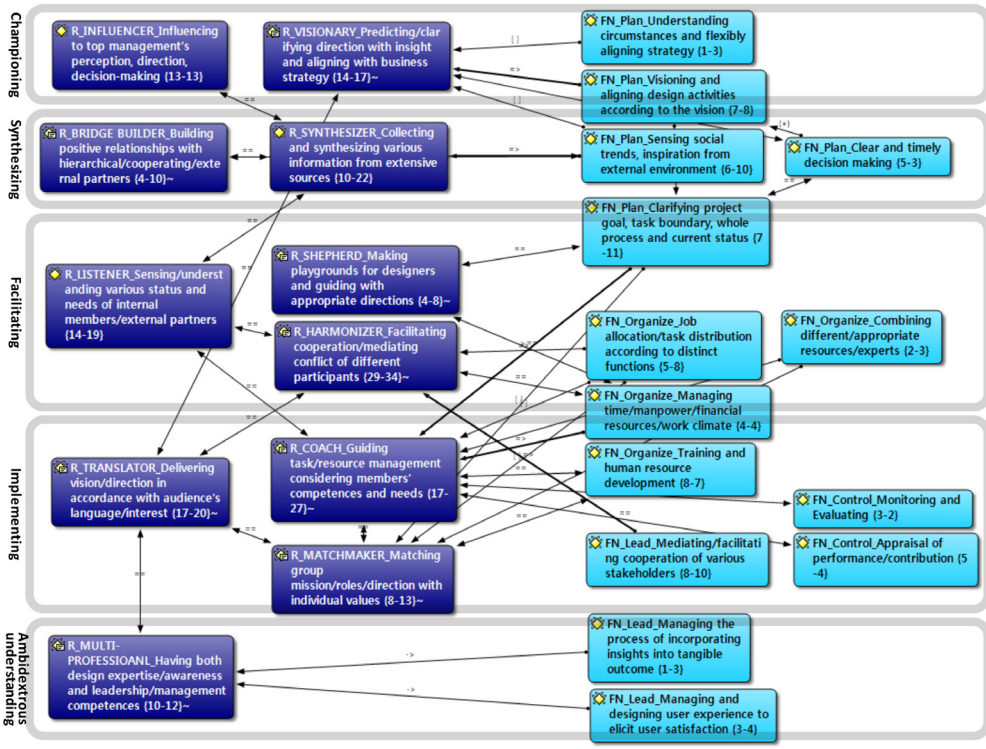

Figure 2 Network view of the roles and functions of MLDMs

Notes. R = Role, FN = Function, Plan = Planning, Organize = Organizing, Lead = Leading, and Control = Controlling. The numbers between parentheses: (1) frequency of mention and (2) frequency of link in the whole data

Meanwhile, the roles of facilitating and implementing in the downward involvement (i.e., Harmonizer, Listener, Shepherd, Translator, Coach, and Matchmaker) are mostly pertinent to the functions of organizing, leading, and controlling. In particular, Harmonizer, Coach, and Matchmaker show wide connection with organizing functions, and Coach additionally has controlling functions. Organizing, leading, and controlling are associated with how to operate a project according to a plan, hence the facilitating and implementing roles would be linked to those functions.

Lastly, the role of ambidextrous understanding of design and management, namely Multi-professional, is related to the functions that lead and manage the process of incorporating insightful concepts into design outcomes. To lead the whole design process coherently, sufficient understanding of both design and management knowledge is essential.

In this way, the identified roles of MLDMs are meaningful in that they could segment the large spectrum of MLDMs' work in practice. This implies that they could be utilized as precise scale points in the spectrum of MLDMs' performances.

4. 3. Different presence of MLDMs' roles by design functional groups

When a code of role co-occurs with a certain attribute code of a design function (Group 1a, 1b, 2, or 3), the role is relevant to that functional group. In other words, the relevance of roles to different design functional groups was analyzed based on the co-occurrence with each design function attribute code. Figure 3 illustrates the roles pertinent to different design functional groups and their overlaps in a Venn diagram. Moreover, the roles were positioned according to a vertical axis, which is composed of the involvement categories of middle management. The horizontal axis from strategic to practical orientation was determined according to the position of functional groups from front-end focused to back-end focused.

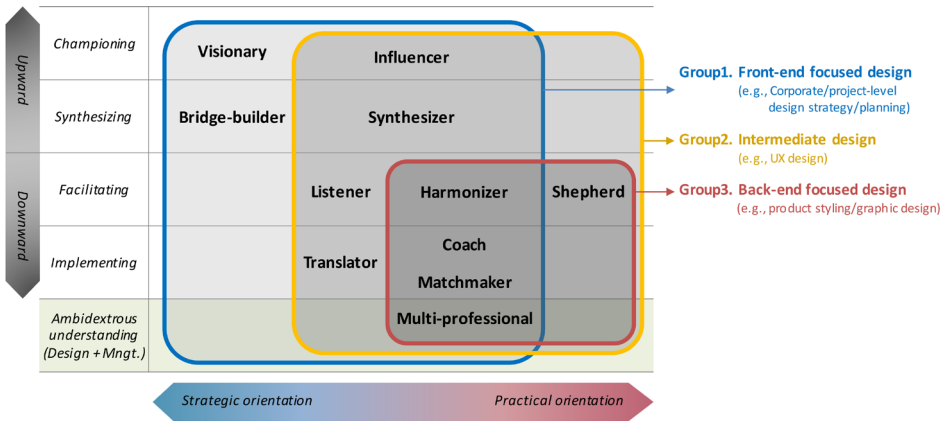

Figure 3 Different presence of MLDMs' roles by design functional groups

Beginning with a group having a smaller scope of roles, Group 3 of back-end-focused design has the roles of Harmonizer and Shepherd in facilitating involvement, those of Coach and Matchmaker in implementing involvement, and the Multi-professional role. Considering that Multi-professional is a preconditioned role of MLDMs, their other roles are primarily pertinent to downward involvement in strategy. Since Group 3 shows a practical orientation suitable for back-end-focused design functions, those roles could also be positioned as having a practical orientation.

On the other hand, Group 2 of intermediate design has relevance with more roles than Group 3, such as Influencer and Synthesizer of upward involvement and Listener and Translator of downward involvement. MLDMs of intermediate design function, such as UX design, are more apt to work in the environment of multidisciplinary cooperation than Group 3 of practical design (*ID 03, 07, 08, and 11*). Therefore, they could be more expected to work as Listeners to, Translators of, and Synthesizers of the various partners' opinions from different disciplines. Moreover, a large part of their work (e.g., UX design work) is invisible or intangible, thus they are constantly challenged to make appeals about the value and contribution of their works to top management, and thus to "influence" the perception of top management or other partners (*ID 08 and 11*).

Lastly, among Group 1 of front-end-focused design, Group 1a of corporate-level and Group 1b of project-level design strategy/planning functions demonstrate the same presence in the Venn diagram of roles, thus they are displayed together as Group 1 in Figure 3. Group

1 is related to more roles than Group 2, such as Visionary to clarify strategic directions with insights and Bridge-builder to make strategic relations from which those insights can be established. However, the role of Shepherd is not included in Group 1's boundary. Since Shepherd is expected to provide flexible environments and to empower individual designers with sufficient autonomy, it might not be appropriate for Group 1 of design strategy/planning whose priority lies in suggesting vision or strategy and leading projects to an intended direction effectively (*ID 03 and 09*).

Overall, practically oriented Group 3 of back-end-focused design shows the roles of downward involvement. However, the more the group is strategically oriented, the more roles of upward involvement are included: Influencer, Synthesizer, Listener, and Translator for Group 2 of intermediate design and Visionary and Bridge-builder for Group 1 of front-end-focused design. These findings imply that each role could indicate a precise position segmenting the wide work spectrum of MLDMs from strategic to practical orientation subdividing the representative three design functional groups into more detailed scales.

4. 4. Different priority patterns of MLDMs' roles by design functional groups

Previously, the different presences of MLDMs' roles were compared according to design functional groups. Meanwhile, the relevance of individual roles can be compared in each group to identify the relative priority of each role. Since the relevance of roles was analyzed antecedently based on the co-occurrence with each design functional group code, the frequency of co-occurrence can be interpreted as the level of relevance, and further as that of priority.

Figure 4 demonstrates different patterns in the priority level of roles by design functional group. The horizontal axis shows the co-occurrence frequency of each role. As mentioned in the Research Method section, UX design functions in IT service companies also included graphic design functions (e.g., GUI), thus one more sample of Group 2 was recruited instead of Group 3 to meet the sample number by industry. Consequently, the discrepancy of sample numbers of Group 2 and 3 could influence the total number of co-occurrence frequencies. For this reason, the frequency numbers in this chart need to be referred to not as absolute values but as relative priorities.

First, Group 1a (corporate-level design strategy/planning) and Group 1b (project-level design strategy/planning) show differences in each role's relevance level even though their overall presence of roles is identical as explained in Figure 3. Group 1a indicates a higher level of relevance to Visionary, Bridge-builder, Translator, Coach, and Multi-professional roles than Group 1b. On the other hand, Group 1b represents more relevance to Influencer, Listener, and Harmonizer roles than Group 1a since they could have more priority on effectively leading and facilitating projects. Meanwhile, Group 1b is still relevant to Visionary and Bridge-builder roles as a design strategy/planning function compared to Group 2 or 3.

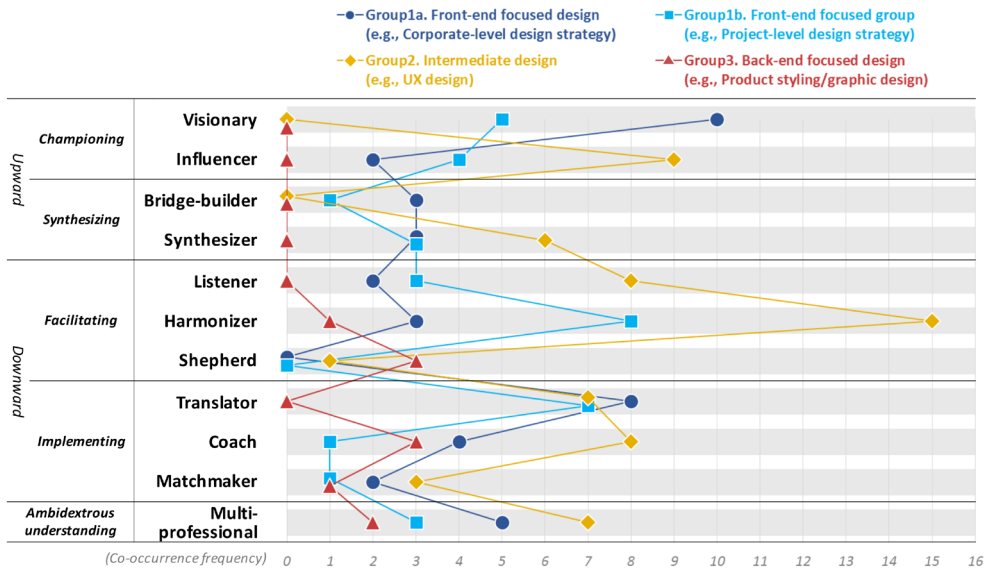

Figure 4 Different priority patterns of MLDMs' roles by design functional groups

Second, Group 2 of intermediate design (e.g., UX design) demonstrates the highest relevance to Harmonizer followed by Influencer, Listener, Coach, Multi-professional, and Synthesizer. Since they usually work in multidisciplinary cooperation with various partners from different disciplines, Harmonizer and Listener could be considered much stronger for Group 2 than other groups. Moreover, a large part of their UX work is intangible or even invisible, thus they could be challenged as Influencers to persuade top management or other partners of the value and contribution of their work (*ID 08 and 11*). Furthermore, in the role of Coach, they could need to appreciate and sufficiently appraise the value of invisible work done by subordinates such as UX designers (*ID 08*).

Lastly, Group 3 of back-end-focused design (e.g., product styling/graphic design) exhibits high relevance to Shepherd and Coach, and especially Shepherd shows the highest relevance among all groups. Coach and Shepherd can be distinguished as follows: a Coach has an already-settled direction or strategy from top management or an expected level of performance, accordingly he or she makes subordinates clearly understand the direction and boundary of assigned tasks as well as encourages and trains them to achieve the tasks. A Shepherd provides sufficient opportunity, autonomy, and freedom to subordinates for their creative performance (*ID 12*), and he or she just checks-up on whether they are going well within a boundary of direction (*ID 04).* MLDMs of back-end-focused design function need to direct designers of practical orientation, namely styling designers who usually prefer to work in a free environment, for their creative performance. Therefore, it is important for the MLDMs in this group to act the role of Shepherd of styling designers.

5. Conclusion

MLDMs are important positions as they are the first stage where strategic or human relations tasks (namely, non-practical design activities) surpass the operational activities of design practice. Hence, they can confront the challenge of performing different kinds of roles and functions from those of practical design. With the significance of MLDMs, this study aimed (1) to identify various role types of MLDMs in a qualitative way and (2) to compare the role types according to different functional groups. In-depth interviews were conducted with 12 MLDMs by different design functional groups across the front-end to back-end product development activities (i.e., corporate-level design strategy/planning, project-level design strategy/planning, UX design, and product styling/graphic design).

Through qualitative analysis, the functions and role types of MLDMs and their different patterns were identified. First, 14 functions were identified under the four categories of management function (i.e., planning, organizing, leading, and controlling). Most of the highly mentioned functions were associated with strategic and tactical level activities, which implies the importance of the "probably not well-trained but necessary" functions to MLDMs.

Moreover, the 11 role types of MLDMs were identified and classified according to the involvement types of middle management in strategy: Visionary and Influencer in the championing; Bridge-builder and Synthesizer in the synthesizing; Harmonizer, Listener, and Shepherd in the facilitating; Translator, Coach, and Matchmaker in the implementing; and Multi-professional as a unique precondition of MLDMs compared to generic middle managers. Moreover, the roles of upward involvement were relevant to the planning functions and those of downward involvement were associated with the organizing, leading, and controlling functions. In this way, MLDMs shared global categories of middle management activities as generic middle managers. However, due to the field specialty, MLDMs additionally underlined the roles of Shepherd, Coach, and Multi-professional who are directly concerned with practical design works, or the roles of Harmonizer, Listener, and Translator who deeply understand and explain design expertise.

Meanwhile, each design functional group demonstrated different priority patterns of roles: the more the group is strategically oriented, the more roles of upward involvement are included. The back-end-focused design group emphasized the roles of Shepherd and Coach to direct and support creative designers effectively. However, the intermediate design group showed high relevance with Harmonizer, Listener, Influencer, and Coach roles due to multidisciplinary cooperation and invisible UX work. On the other hand, among the front-end-focused design group, the group of corporate level design strategy/planning emphasized more Visionary and Bridge-builder roles, whereas the project level group represented more relevance with Influencer, Listener, and Harmonizer roles.

The value of this study lies in the contribution of these findings to both professional practice and academia. First, the professional contribution can be identified as establishing competence development guidelines for MLDMs based on their roles and functions.

To perform certain roles or functions, the work activities need to be mastered and the proficiency in respective activities is determined by one's fundamental skills and knowledge level (Wu, Chen, & Lin, 2004). For this, a competence model for design managers (i.e., various skills and knowledge at the cognitive and social competence levels and diverse work activities at the functional competence level) and the influential factors to cultivate relevant competences were developed in prior studies (Kang et al., 2015; 2017). Therefore, the roles and functions of MLDMs can be associated with the competences required for performing them, thus the associations can be developed as a competence development guideline. An MLDM can determine the high priority roles in his or her position and combine the selected roles and their associated functions, competences, and influential factors such as in the example of a competence development guideline shown in Figure 5. This kind of customized competence development guideline could be used as a career path guide and a self evaluation sheet for current and future MLDMs, and also as a human resource management guide for top-level design managers. Moreover, design executives can improve the work environment of their design organizations recommended by this guideline, which can encourage the better performance of MLDMs and enhance their competence development.

Second, this study can have an academic contribution to the body of knowledge of design management. The role types and functions and their different priority patterns were identified from the perspective of MLDMs who have been underestimated in design management research. Furthermore, the role types could especially contribute to design management knowledge by segmenting the wide spectrum of MLDMs' work into detailed scales, which could help determine the particular set of relevant functions or competences.

ROLE	VISIONARY + SYNTHESIZER	
FUNCTION	(Plan) Visioning and aligning design activities according to the vision (Plan) Understanding circumstances and flexible alignment of strategy (Plan) Sensing social trends, inspiration from external environment (Plan) Clarifying project goal, task boundary, whole process and current status (Plan) Clear and timely decision making	
COMPETENCE (Kang et al., 2015)	**COGNITIVE**	
	Knowing	Knowledge of new disciplines
	Understanding	Understanding market/stakeholders/business system Understanding relationships in processes/projects/business
	Thinking	Versatility in analytical and intuitive thinking
	FUNCTIONAL	
	Conceptual work	Clarifying vision/design goals and aligning them with business strategy Observing users/context and interpreting latent needs
	Implementational work	-
	SOCIAL	
	Communication	Communicating with all stakeholders/different disciplines
	Relationship	Building/managing strategic relationships with partners
	META	
	Attitude/Mind	-
INFLUENTIAL FACTOR (Kang et al., 2017)	**PERSONALITY**	
	Cognition	Information arrangement and prediction with insight Holistic perspective, connected thinking Analytical, deductive thinking, Framing
	Trait	Insightful/creative personality Flexible/open-minded Outgoing & sociable personality
	Self-management	Tenacity, persistence despite obstacles Adaptability to changes (environment, vision, corporate culture)
	Social awareness	Organizational awareness Sensing/understanding other's needs/strength/weakness Sharing knowledge/experience for synergy
	Relationship management	Information gathering from broad personal network
	WORK ENVIRONMENT	
	Cultural	Vision(corporate/project/product) as a direction/guide of decision Sharedness of vision Information sharing for synergy Frequent interaction and feedback Feedback and cooperation
	Social	Social environment for multidisciplinary cooperation
	Physical	Relevant functions in the same location Proximity to downtown (sensitive to social trends, inspiration)
	MOTIVATION	
	Personal	Appreciation for the role of invisible strategy/management/bridging Other's perception change thanks to one's work
	Organizational	Training course, Seminar

Figure 5 An example of a competence development guideline for the combined role of Visionary and Synthesizer

Despite those contributions, this research can have limitations caused from the cope of empirical study limited to Korean MLDMs of major corporations. Since Korean corporations can have cultural specificities in the work environments or work processes, a further study can be possible to compare the MLDMs of different cultures such as those in Asia, America, or Europe. Moreover, future comparison studies could extend their samples to include small or medium-sized companies, other industries, other design disciplines, or design consultancies.

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