

Study on the storage system in the Japanese workplace

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Part 1 Introduction

Research Background.....	1
Research Plan.....	6
References.....	7

Part 1

Introduction

Office is a place equipped for creation, processing, storage and exchange of information for business purposes. It is needless to say that office where we work, but we spend in office by equal time or more time than the time when we spend at our home. The life in office must also be enriched. It is said that office is the place of living [1,2]. Work environment has a substantial effect on the productivity of workers. Their performance is directly affected by the quality and suitability of the workspace and work tools, such as, things as a healthy environment, adequate workspace, good communication, information technology tools, and convenient furnishing. It is obvious that people who are constantly uncomfortable, or have to continually interrupt their work to make themselves comfortable, will be less productive than those who do not have to deal with such distractions [3].

This research is concerning the office furniture. It definitely focuses on the actual status of the storage system within a workplace, as it plays a critical part for helping and supporting workers to perform their job effectively. Storage is possibly the most important aspect of office furniture [4]. Although the term “office storage” typically calls to mind rows of metal file cabinets, storage in today’s workplace takes on a more varied and dynamic role in work support [5].

Based on the survey though the academic studies, we found out that there are several studies and surveys have been done concerning the office environment, work style, and furniture design, such as:

- Studies that concern office environment and the work style:

1. One of those studies discussed how the appearance of automation and the advance of information network systems affect on the office environment and the office work style as well [6]. In another study, we found that it concerns the different types of sound in the working area (e.g. conversations, machine operating sounds) and how the sound is effect on the workers productivity [7]. In another study, author discussed the relationship between the evaluation of office privacy and communication. In addition, he tried to ascertain the importance of these factors to the workers’ productivity [8]. One study talked about the effectiveness of the information technology advance on the work style. Author classified the work style of office workers into two types based on the human interaction and autonomy/independence of worker during the work- time: a. workers with high interaction and high autonomy. b. Workers with low interaction and high autonomy [9]. The aim of another study is to create a comfortable underground workspace. Therefore, an experiment was carried out at a laboratory in university of

Tokyo in order to find out and solve the problems of the office environment (including air condition and lighting) which affect on the workers' performance [10]. Another study talked about the suitability of the office space to the work style. It aims to plan the office space according to the current work style and communication behaviors. The analysis was carried out from three aspects using graph models established from two office observations [11]. Another study aimed to investigate segmentation of office materiality by means of space three factors- product, human and environment in order to propose how we can create a more accurately digital office direction [12].

- Studies that concern Japanese office furniture:

One of those studies proposed a flexible and adequate height of worktable in order to enable a leg-disabled person to work effectively [13]. In the other study, author discussed how the progression of "user computing" in the early 1980s changes the work style and the office environment. This study aimed to identify that the fundamental solution of the design subject for constructing the workstation environment which has widely spread through the today's office was mainly made in the first half of 1990s [14].

- Studies that concern the storage furniture and its space:

One example of these studies focused on designing a storage element that can be used on the student's workstation in the university so as to increase the capacity of personal storage space [15]. Another study talked about the historical meaning of Dohgura (a storage room in buddhist main temple) [16]. In other study, author focused on the characteristics of the office furniture design of the western style since 1920s. In addition, he discussed how the Japanese furniture manufactures, such as, Itoki manufacture modified the design of the storage unit in order to be matched with the Japanese office works [17]. Another study discussed and analyzed the storage containers (TSC) culture in Korea. The survey was carried out in the mountainous areas in order to identify the materials, location and function of TSC inside a house [18]. Another study was held in Korea among University students about the recognition and image concerning the traditional storage containers (TSC) and modern packages (MP) that are made of plastic and mass-produced. Author tried to identify the consciousness of the culture of TSC and MP among the young people in South Korea. [19]. Another study evaluated and analyzed the kitchen's storage system in the house concerning types, size and its items organization in order to be used comfortably [20]. In another study, author talked about how the storage furniture has been studied and improved on the external appearance form, an ornament, the material and usage. But structure itself was not discussed, as it should be. He has sought for a new base structural development and wanted to propose attractive storage furniture that can be set up with small number of module parts [21].

From the previous studies and another, we realized that the academic studies concerning the office storage system and its efficiency are so limited and most of them have mainly discussed by the research teams of office furniture manufactures, such as

Okamura, Uchida and others. In this research, some of these manufactures' data are used (See part 2 and 4 - p. 10, 76, 113). For example, the result of the survey that was carried out from 1990 to 1997 by New Office Promotion Association (NOPA) and Okamura research team in order to identify the average Fm for each person inside the office revealed that it is about 6.9 Fm [22].

According to another survey which was carried out in 1993 by Japan Facility Management Association (JFMA) in order to identify the workers' opinions about file accessibility, we detected that about 43.1% of workers can find the required file easily. About 41.9% of workers cannot find the files easily and about 15.0% of workers selected "unclear" [22].

Although the office manufactures and some associations attempted to clarify somewhat the storage system's features in the workplace, the storage system efficiency has not been discussed yet. Therefore, the present research aims to define and analyze the storage systems' problems that have great effect on the workers' productivity as well as explain the reasons that generate their occurrence inside the workplace. Furthermore, we aim to recommend effective tips in order to get high performance storage system whether in the personal or group working area.

The term of storage system concerns the storage unit features (such as, types, size, capacity) and its items (such as, paper documents, books, digital tools, etc.), as well as their management/ organization within a work area [23, 24].

To achieve our intention, this research tried to investigate and evaluate the storage system not only inside a workplace, but also within the current market as follows:

Part 2: it aims to identify the main items inside a workplace (e.g. paper documents, digital tools, books, etc.) which are needed to be stored. Basically, each item is kept in the storage unit that matches well with its size, design and the other features. Therefore, the storage system that is required to evaluate and discuss its efficiency and problems in the following parts of this research determined according to the item that takes up great space of the storage units (including personal and communal use) within the workplace.

For case studies, we selected companies that have a variety of work types. In the visited companies, since there are different divisions, such as design, accounting, and sales, so that we have a great chance to observe and know the features of the current workplaces and how the storage systems are influenced by the different work types.

Based on the observation inside 15 workplaces within five Japanese companies (five accounting division's workplaces, five design division's workplaces and five sales division's workplaces) and hearing from 50 persons who work in these workplaces, the paper storage system was selected for studying on, as the paper documents occupy a great space of the storage units.

Part 3: it includes two chapters and it aims to search for the features of the storage system. In the first chapter of this part, we tried to investigate within the market for the

available paper storage products, including its types, size and capacity. Moreover, the modifications concerning the storage furniture design from 1950s to the present day were discussed in order to understand the fitness of the storage unit for the current office works. Therefore, four office furniture manufactures Kokuyo, Itoki, Uchida, and Plus were visited because they are the most famous manufactures for the sales of office furniture in Japan. Several interviews were carried out with their designers and the filing system teams. Moreover different catalogs were examined to get precise information about the development of the storage unit design in the market.

In the second chapter of this part, as the most of manufactures and designers emphasize on the importance of the storage unit's mobility in order to accommodate the worker's needs and save his/her time and effort, this chapter aims to identify the suitability of the mobile storage unit of individual use for the work performance. Therefore, five accounting division's workplaces and five design division's workplaces within five Japanese companies (the same companies we had previously visited) in Tokyo and Fukuoka were visited as a field survey. Observation, hearing, and taking pictures were used to evaluate their workplaces including the work style and its effects on the storage systems. In addition, a questionnaire was distributed among 106 persons who work in these workplaces (about 72 persons work in the accounting division's workplaces and about 34 persons work in the design division's workplaces) so as to know their opinions concerning the mobile storage unit.

Part 4: it includes two chapters. This part aims mainly to identify and discuss the paper storage system's problems including personal and communal use and its efficiency inside the workplace. We selected accounting division's workplaces within the visited companies for two reasons: a. The work type of accounting division's workplace requires a person to use the storage systems during a work-time more than the other persons who work in the another divisions' workplaces, such as the design and sales divisions. b. Its workplace is overloaded by the paper documents more than another divisions' workplaces.

In the first chapter of this part, the personal storage system's problems within the own workstation were identified according to observation, hearing from the workers and making a questionnaire for them. Furthermore, the main reasons that generate these problems were discussed. On the other hand, we recommend four steps in order to overcome these problems which regard mainly file organization within the workstation. First step is concerning how to reduce the amounts of papers that are placed in the workstation to keep a space for the next papers. Second step is regarding how the workers display the documents clearly, so that they can get a file quickly. Third step is concerning how the worker assigns a home for each paper. In addition, distribute the files within the available storage space well to be simply accessed. As for fourth step, we advise the workers to maintain the files' organization within a workstation regularly.

The recommended steps were tested on 20 persons at laboratory in Kyushu

University to be sure of their effectiveness.

In the second chapter of this part, based on observation, hearing from the workers and making a questionnaire, the problems of communal storage system were identified within the same workplaces that we had previously visited. These problems concern mainly file accessibility, as well as the file cabinets' capacity. For overcoming each problem, several tips are recommended and tested on 20 persons at laboratory in Kyushu University so as to prove their effectiveness.

Regarding the first and second problems of communal storage system which concern file accessibility, we recommend the following tips:

A. Revamp the filing organization within the storage unit. A worker has to display the documents within a file cabinet clearly by considering these points: filing system application, filing arrangement, select the file tools, use a divider, create a filing index and select the storage unit type. In addition, the files have to be distributed within a file cabinet based on frequency of use.

B. File cabinets' organization within the workplace has strong influences on file accessibility. Three tips has to be considered for accessing communal file easily as follows: the distance between the file cabinet and the workers' workstations, the available space in front of the cabinet and the area around the file cabinet has to suit for the workers.

As for the third problem of communal storage system which regards the storage capacity, six points are recommended: reduce the retention period of files inside the cabinet, promote the usage of digital storage, encourage sharing information, select convenient file tools, arrange the files horizontally to increase the cabinet's capacity about 2% and use a divider.

Part 5: the conclusion. According to the storage system's problems and the workers' requirements, as well as the results of our surveys and experiments, this study suggests four tips for improving the efficiency of storage system (whether personal or communal use) inside a workplace. For each tip, we propose some keys to aid the individual and group of workers to achieve it. The recommended tips that regard how to find for each paper a home and access the files easily are as follows: a. Decrease the amount of paper that we have within a workspace by considering frequency of use, encouraging sharing information and promoting the use of digital media. b. Stretch the storage space by going vertically, selecting the file tools carefully and using a divider. c. Distribute the documents through the storage units well by considering frequency of use. d. Display the files inside a storage unit clearly by selecting the file tools carefully, using a divider, applying clear filing system, selecting the type of file arrangement, selecting a storage unit type and renewing the list of files' titles regularly.

Overall, this study offers earnest and essential results that might help either companies or individuals to gain high performance storage systems.

Research Plan

■ Table of Contents

Part 1 Introduction

Part 2 Examine the Storage System Items in the Workplace

- Introduction
 - Purpose
 - Methods
- Results and discussions
 - Japanese paper size
 - File tools' evaluation
- Conclusion
- Summary

Part 3 Study on the Storage System Features

3.1 Survey of the Storage Products in the Market

- Introduction
 - Purpose
 - Methods
- Results and discussions
 - Defining the storage capacity
 - Personal storage products Within the market
 - Communal storage products Within the market
- Conclusion
- Summary

3.2 Property of the Mobile Storage Unit for the Work Performance

- Introduction
 - Purpose
 - Methods
- Evaluation of the current workplace
 - Features of the accounting division workplace
 - Features of the design division workplace
- Results and discussions
- Conclusion
- Summary

Part 4 Identify the Problems of the Storage Systems in the Workplace

4.1 Personal Storage System Problems

- Introduction
 - Purpose
 - Methods
- Research findings
 - Storage unit's features in the workplace
 - Storage unit capacity inside the workplace
 - File classification and its home
- Results of survey
- Discussions
 - Capacity of the personal storage space is inefficient.
 - File cabinets' locations are not convenient for the workers.
 - Personal style
 - Workers have not enough time to organize the documents regularly.
 - Filing management is not adequate.
 - Files are not organized and displayed well.
- Recommended steps for reorganizing the space of the workstation
- Recommended steps' tests
 - Purpose of experiment
 - Methods of experiment
 - Results of experiment
- Conclusion
- Summary

4.2 Communal Storage System Problems

- Introduction
 - Purpose
 - Methods
- Results and discussions
 - File organization within the storage unit shelves
 - File cabinets' organization within the workplace
 - Storage unit capacity
- Conclusion
- Summary

Part 5 Conclusion

- Personal storage system Problems
- Communal storage system problems
- The recommended tips for getting high performance storage system
- Examples to apply the recommended tips

- Acknowledgements
- Appendix - A
- Appendix - B
- Appendix - C
- Appendix - D

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