

Study on the storage system in the Japanese workplace

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Part 5

Conclusion

Although organizations predict the paper's eventual disappearance from workplaces throughout the world because of the enormous capabilities of electronic media, the fact is that the paper abounds. Therefore we believe that a storage unit is still a necessity device inside a workplace for keeping not only the papers, but also other office supplies, such as electronic tools, stationery, references and personal items.

The results of the survey that was carried out within four office furniture manufactures, Kokuyo, Itoki, Uchida and Plus in order to know the features and design developments of the storage furniture* revealed that a storage unit has two kinds according to its ownership: personal and communal.

Personal storage product in the market is, such as a pedestal, wagon, vertical unit, shelf, overhead bin, and tray. Communal storage product (concerning wall and low unit) is, such as the open, slide, door, drawer and combination unit. On the other hand, we found out that the essential modifications of the storage design from 1950s to the present day (including the personal and communal units) are concerning its size for the following factors: increasing the unit capacity, application factor, ergonomics factor and for saving the office space as well. Moreover, the designers recognized the importance of storage unit mobility especially to accommodate some office works which is built on the concept of the workers' mobility in the company, such as the design works. As a result, maker regards the former features of storage furniture in order to fit different types of the office supplies and the current office space. Moreover, it could support the today's office work style.

On the other hand, this study tended towards a workplace in order to identify the main problem of storage systems and its effects on the work performance. Inside the workplace, we focused on identifying the paper storage system problems, as the documents take up large space of the storage unit. The results of series questionnaires and interviews with 62 persons who work in five accounting division workplaces in Tokyo and Fukuoka revealed that the main problem of paper storage systems concerned their capacity and file organization within the workplace.

1. Personal storage system problems

1.1 There is not enough space available on the desktop for working, as the files are piled up on it. This problem generated due to the following reasons: first, filing management is not adequate. Second, personal style which means the way of thinking for organizing the documents within the personal storage space. Third, storage space

within the own workstation is inefficient. Fourth, workers have not enough time for organizing and maintaining their documents regularly. Fifth, the organization of file cabinets within a workplace is not convenient for the location of some workers' workstations.

- 1.2 Workers cannot find the files which they need easily because files are not organized and displayed well within the own workstation.
- 1.3 Files are stacked under the desk and therefore workers cannot sit well during the work time.

2. Communal storage system problems

- 2.1 The required files cannot be accessed quickly, as the files' organization within the file cabinets' space is not well.
- 2.2 Workers find difficulties to access some files, as they are kept in far units.
- 2.3 Storage units are overloaded with the files and therefore there is not enough space for coming papers.

Hence, we recognized that the storage system is more than just a container. It is a system that has great responsibility inside the workplace for helping a worker to accomplish his/her job effectively. No doubt, the primary function of storage furniture inside the workplace is simply to put away the documents and the other supplies not only for the next use, but also when each paper has a home, so that an individual gains a sense of control and the workplace seems clean and in a good view for the clients.

This study demonstrated that the workers need a storage system which is kept and displayed the documents in an organized way. In the other meaning, they require a solution to keep all and to access all easily inside the workplace (Fig.1).

Therefore, this study focused on how to make the storage capacity inside the workplace adequate for the amounts of paper. In addition, we attempted to organize the documents within the available storage space well.

Basically, successful file organization is not only helping a person to get what he/she needs easily, but also it might increase by some means the capacity of storage unit.

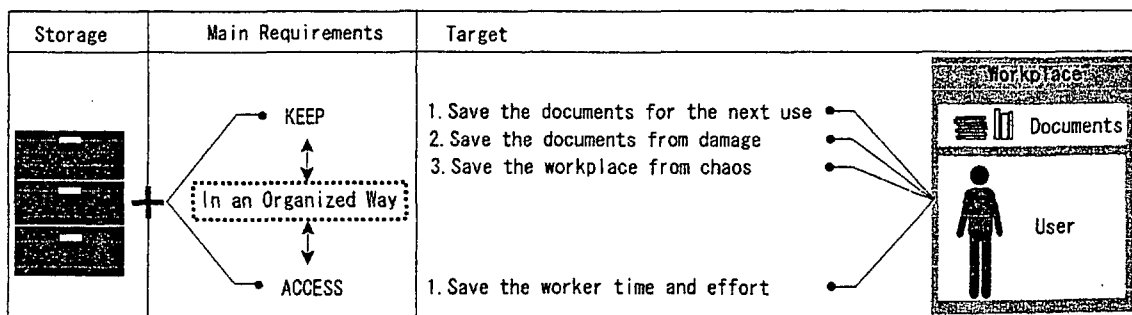


Fig. 1 Workers' Requirements from the Storage System Inside the Workplace

Based on the results of the survey and several examinations concerning the storage systems' organization, we recommend the following tips/steps which can be used so as to improve the storage systems, either personal or communal one. These tips aim to find a place for each paper within a workplace. In addition, a worker can pick up the needed file easily (Fig. 2).

3. The recommended tips for getting high performance storage systems

(1) To achieve the workers' requirements that regard how to find for each paper a home, we suggest the following tips:

- (1.1) Decrease the amount of paper that we have within a workspace.
- (1.2) Stretch the storage space.

(2) To achieve the workers' requirements that concern how to access the files easily, we recommend the following tips:

- (2.1) Distribute the documents through the storage units well.
- (2.2) Display the files inside a storage unit clearly.

The following keys (A, B, and C) are suggested to accomplish tip no. (1.1):

A. Consider frequency of use

The concept of frequency of use has to be considered for reducing the amounts of paper inside a workplace, as well as for distributing the documents through the storage units too.

As for the first consideration, accounting division's workplaces require enormous amount of space for their file cabinets, as we found in many cases that the storage space is overloaded with the paper trail of past events and actions. For example, every letter and transaction, a worker keeps just in case it may ever be needed. Based on the hearing, most of these documents are accessed and needed infrequently. Some files are kept as a legal necessity and many are kept as they provide a kind of emotional security blanket.

In order to save enough space for coming papers, it is important to reduce the amounts of paper inside a storage unit by decreasing the retention period of files inside the workplace (exception that they are kept for the legal reasons). Basically, the retention period of file within a storage unit has to determine according to how often this paper is used. But in many cases, this factor is ignored, however it may have a positive consequence for saving the storage space. In the light of this factor, we recommend that the frequently used documents (alive files), e.g. an original data, confidential/ important file, an integral part of the project or client file have a priority to be kept within the working area until their usage are decreased gradually.

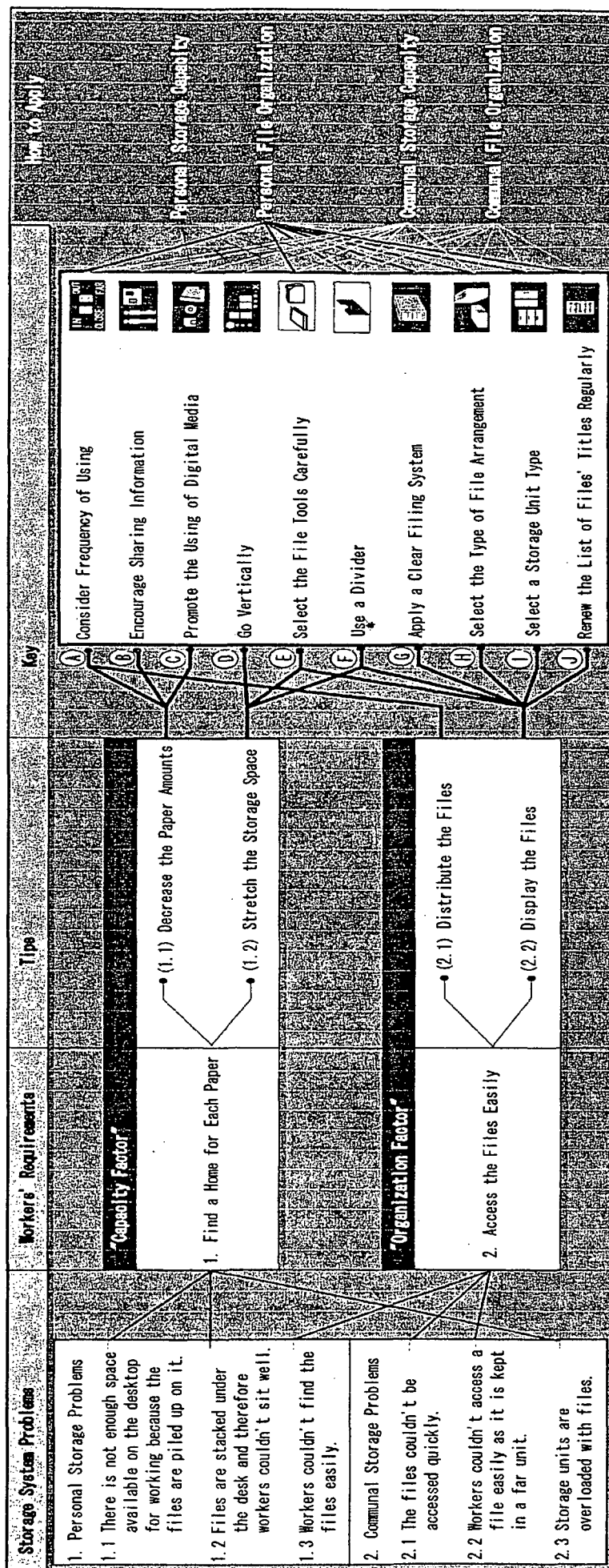


Fig. 2 How to Improve the Storage Systems Inside the Workplace

Concerning the other documents which are sometimes used (expected files), we recommend a worker to keep them within a communal cabinet, e.g. from six months to one year. But within an individual workstation, this period might be decreased because the personal storage space is usually limited.

As for infrequently used documents (archival files), a worker has to keep them outside the workplace, e.g. in the archive. Concerning the useless, unidentifiable and unused papers that are no longer used even in the future, they have to be thrown out immediately.

For the second consideration which regards how to distribute the documents whether inside a workplace or a storage unit itself, we recommend the following:

a. File distribution within the work area: basically for easy access, we need to keep in mind that the more we use it, the closer it should be to us.

- Communal work area: in the light of the mentioned concept, this study concluded that frequently used files (communal use) should be kept in a convenient place within a workplace. To determine this place, there are three points have to be considered:

1. The distance between the file cabinet and the workers' workstations. It is important to keep the communal file within the nearest cabinet to the majority of workers.
2. The space requirements for the file cabinet. In other words an available space in front of a cabinet for opening and using its drawers comfortably.
3. The surrounded settings related to the location of a file cabinet inside a workplace.

- Personal work area: this study strongly recommends that frequently used files have to be kept in a suitable location within an available personal storage area in order to be handy reach. For example, in the case of having a pedestal and one drawer within a communal file cabinet to keep the individual files, we recommend a pedestal to place the frequently used files rather than the file cabinet's drawer because it is closer to a worker than the other storage units. But when a worker is offered with a vertical storage unit, such as a shelf on the desktop, we recommend that the frequently used files are placed on the shelf (See the reasons of its selection in key "D", page no.141) and the remaining files are kept within a pedestal and file cabinet. The results of the examination which was carried out through this study revealed that the time of file accessibility was about 12 seconds when a file was placed within a pedestal and it was about 9 seconds when a file was placed on the shelf (upon a desktop).

b. File distribution within the storage unit itself:

- Communal storage unit: according to the Japanese human size, we found out that the shelves' numbers four, three and five within a tall unit (e.g. its height is 2100mm) are suitable to keep and access frequently used files (alive files). First and second shelves (from the bottom) are convenient to keep the files that are sometimes used (expected files). As for sixth and seventh shelves, they could be devoted for storing the

files that are used seldom (archival files).

In a case of low unit (e.g. its height is 1200mm), an upper shelf (e.g. the shelf no. three) is the most convenient drawer to keep and access frequently used files.

- Personal storage unit: to distribute the files inside a pedestal according to the recommended concept, a worker has to consider that frequently used files are firstly placed in the front of the drawer, next infrequently used files.

B. Encourage sharing information

It is becoming more important to share information within a workspace, whether in a team area or in a communal space than ever before. Shared information might reduce the amount of papers inside a workplace. There are several methods to share information inside a workplace.

Visual information considers an important method to share information. For example, the whiteboard and poster could transfer a certain kind of communal knowledge to the workers, such as, assembly instructions, notes, maps, diagrams, procedures, or financial statements etc. These recommended means are not only essential for reducing the paper amounts inside a workplace but also this shared area could enhance and augment the informal communication among the workers. In fact, face - to - face communication is one of the most adequate ways to share information, build relationships, and recall memories. In other words, it catalyzes for making true social relationships and for transferring information that helps in many cases to solve different problems related to work.

On the other hand, there is another issue that has to be regarded in order to decrease the amounts of paper inside the workplace. We recommend a company to get rid of duplicated papers that might be kept within each worker's desk.

C. Promote the using of digital media

The development of electronic media does not drastically reduce or eliminate paper as quickly or as radically as is often predicted or expected. Rather, digital media is needed to coexist with paper not to replace it. Today the use of digital storage for saving information considers a vital and fit solution in order to reduce the enormous amounts of paper inside the workplace.

Companies need constantly to encourage and instruct their workers especially older persons how to use digital storage, as some of them do not have somewhat enough experience to operate it and therefore they tend to use the paper storage media for saving the information.

Basically, the suitability of using either paper or electronic media to reserve the information relies much on the importance of the information.

For example, an important document, such as contracts and paid invoices, or other document that has a stamp or signature is necessary to be saved on the paper in order to keep its originality. Moreover, daily information is better to be saved on the paper media in order to keep its contents not out of sight.

On the other hand, information that is obtained from the Internet, e-mail and the other one that is used infrequently are preferable to be recorded in the electronic media.

The following keys (D, E, and F) are suggested to get the tip no. (1.2) that concerns how to stretch the storage space.

D. Go vertically

To increase the storage capacity either personal or communal one, it is better to extend the storage space vertically instead of depending totally on the horizontal office space which may need for another purposes.

Basically, Japanese office space is shrunk in response to the tight economy. In the light of this fact, to increase the communal storage capacity without occupying the horizontal office space that might be needed for another activities (such as, a small meeting area, break area, etc.), we place one storage unit upon the other one instead of placing one beside another, as the file cabinets' width and depth have the same sizes. Either by using a tall file cabinet instead of a low one.

As for stretching the personal storage space without appropriating the personal area of another worker (e.g. by adding a wagon beside a desk) or without using the desktop surface as a storage space, the vertical units, such as, an overhead bin, vertical bin, tray and shelf are the recommended storage units to be used. The direct benefit of using a vertical unit within the personal work area is to increase the storage capacity. But the indirect benefits from using that unit are to relieve the amounts of paper which are kept within a pedestal. Therefore, a pedestal could be moved from one place to another with its owner easily. Furthermore, when the amounts of papers are decreased inside a pedestal, there is a possibility to reduce its size in order to be moved simply within whether a narrow or wide workplace.

According to the results of the experiment that was carried out within this study so as to reorganize the files within a desk and its storage space, we detected that a low-height shelf above the desktop (its height is about 200mm) is more suitable to place the documents than the other options, such as, an overhead bin and a high- height shelf (its height is 500mm from the desktop) because of two reasons:

1. Its height enables a person to access the file easily (handy reach).
2. Its height allows a person to see the folder's tab well (clear visibility).

E. Select the file tools carefully

There are several types of the file tools being sold within the Japanese market. Based on the survey within the visited workplaces, we realized that the common used types of the file tools are a binder, folder and a file box.

The results of the comparative studies that were carried out within this study so as to identify the advantages and disadvantages of each mentioned type concluded that the file tools have strong effects on the storage unit capacity and file display.

Concerning the storage capacity, it is waste of the storage space when a file box is used to keep a few papers, as it has a big size label that enables a person to see the folders' contents easily. In order to save the storage unit space, it is important to regard the amounts of paper before selecting the file tools as follows: first, a binder could be used with big and small amounts of paper, as it has various thickness sizes. Second, a folder is recommended in the case of having small amounts of paper (e.g. one paper to 240 papers). Third, a file box is convenient to be used in the case of having big amount of papers (e.g. 660 to 1200 papers).

However a binder and file box are convenient to be used with the big amount of A4 papers. We recommend latter one rather than the former type to be used within a file cabinet, as the capacity of file cabinet increases about 27% by using a file box.

Regarding file display, this study concluded that the storage unit features, such as its type and height have critical effects on file accessibility. For example, a binder could be kept within any type and height of file cabinet. As for a folder, the recommended file cabinet height for observing its tab easily is about 1200mm. As for a file box, in order to see its label clearly, the slide, open and door file cabinets are convenient more than a drawer cabinet to keep it.

In the case of having, e.g. diagonal or vertical tray upon the desktop, a plastic sleeve is a recommended type of file tools to save the papers because its transparent cover might enable a worker to see the file's contents clearly.

F. Use a divider

A divider has great effect on saving the storage space, as well as on displaying the documents within a storage unit neatly as follows:

1. For stretching the storage space, it is essential to keep the papers, references or the file tools, such as a folder, binder, and plastic sleeve in a vertical status, as the diagonal status of document occupies a large space of storage unit. Based on the examination that was carried out within this study, we found that by using a divider we could save about 63% of the storage space.
2. For displaying the files well, a divider is required to differentiate between the different groups of folders that are classified according, e.g. to their subjects, so that the required file of any group would be accessed easily.

In order to gain the tip no. (2.1) (Fig. 2) which concerns how to distribute the files within a work area, we need to consider the concept of frequency of use (See key "A", page no.137).

Regarding the achievement of tip no. (2.2) (Fig. 2) that concerns how to display the documents inside a storage unit, we suggest the following keys (E, F, G, H, I and J). As for keys E and F, see the pages no.141 and 142.

G. Apply a clear filing system

Actually, we do not have to rely on our memory at all to get the information, as we lose usually a lot of time and effort, furthermore in many cases the required information is not found.

According to the results of the survey, this study recommends the following points to get what we need easily:

1. Sort the documents into groups according to their subjects. When one group of files has a lot of documents, it is better to break it into small and definite groups based on, e.g. alphabet, project name, etc.
2. The documents of each group should have cues in order to know simply their locations. Labeling and coding systems are essential for saving the work time. The results of the experiment that was carried out in this study revealed that the average time of file accessibility without using a visual sign was about 14 seconds. But, when the labeling and coding systems were used, the average time of file accessibility was about 9 seconds.

Labeling system recommendations:

- The point 11 is a suitable font size for a clear writing on the tab.
- In the case of having an English title, it is better to be written on the label horizontally than vertically for reading it easily.
- To read and see the folder's title obviously, use a straight line of letters not a dotted line for writing the title.
- It is effective to write a simple and abbreviated title for easy searching.
- Use a bold and black lettering on white labels for clearest reading.

Coding system recommendations:

- Tab coding position can be fair for communicating important information to a worker by making the normal folders with a left tab and an important one in a folder with a right tab.
- Color tabs work well to differentiate between the documents of several groups. Limited color folders are recommended for easy searching.
- Coding system by using, e.g. different materials "e.g. plastic sleeve, paper folder" or design of file tools might be working well in order to distinguish between many groups of documents.

H. Select the type of file arrangement

The survey that was carried out within the Japanese workplaces found out that the files are usually arranged within the storage units (including a personal and communal unit) horizontally and sometimes vertically (as piles).

This study concluded that the vertical ordering of documents (a folder is put upon the other one) has to be excluded absolutely when a worker arranges the documents within any storage unit because of the following reasons:

1. It is not adequate to display the documents clearly within a storage space, as the folder's tab is usually hidden by the other folders which are placed upon it and therefore a worker loses a lot of time to access what he/she needs.
2. It might decrease the storage unit capacity. For example, we found out that the capacity of one shelf within a file cabinet (its size is width 800mm x depth 450mm x height 1200mm) reduced about 2% in the case of arranging the binders (each binder size is width 242mm x height 307mm x thickness 15mm) vertically.














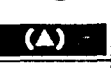

Concerning the horizontal arrangement, it is sorted into two types:

1. Site - to - side (S to S) ordering type means that the documents are placed from one side of the drawer to the other side.
2. Front to back (F to B) ordering type means that the documents are placed from the front of the drawer to its back.

In order to access the files easily, place the document's tab directly to the worker's sight. This means that a worker does not have to turn his body to see the folder's tab.

In the light of the previous concept, the first type (S to S) is a recommended way to be used within a desk drawer, desktop space, and a shelf cabinet (e.g. open, door and slide) for displaying the document's label clearly. The results of the experiment that was carried out within this study revealed that the average time of file accessibility when the files are arranged from front to back in the pedestal was about 11 seconds. But when the files were arranged within a pedestal side - to - side, the average time of file accessibility was about 9 seconds.

Regarding the second type (F to B), it is convenient to be used within a drawer cabinet (e.g. size width 800mm x depth 450mm) for gaining two benefits: first one is to see the tab of folder easily. Second benefit is to increase the capacity of one drawer by using a file box from 0.7Fm to 0.8Fm (about 14% up) (Fig. 3).

Storage Unit Type		Files Arrangement		
		Vertically 	Horizontally	
			S to S 	F to B 
Drawer	Desk Drawer	 (X)	 (O)	 (Δ)
	File Cabinet	 (X)	 (Δ)	 (O)
Shelf	Desktop	 (X)	 (O)	 (Δ)
	File Cabinet	 (X)	 (O)	 (X)

● Convenient
 ▲ Acceptable
 X Inconvenient

Fig. 3 Recommended Ways to Arrange the Documents within a Storage Unit for Clear Display

I. Select the storage unit type

The storage unit type plays a critical part in displaying the documents well, so that a document can be accessed easily. According to the survey that was carried out within the market and several workplaces, this study concluded that the open and glass door units are convenient for keeping the documents which are used frequently more than the other types of storage unit, such as drawer, metal door units, etc. In other words, the open and glass door storage units are suitable for making the daily or important document always present as the documents' label are clearly displayed without any barrier (regarding the unit's doors).

On the other hand, the drawer and metal door units fit well for the documents that are used infrequently. In addition, these units are convenient to store a confidential document, as their doors can secrete the document's contents from the visitors for example. But in this case, a visual sign (e.g. red cue) is needed on the unit's surface for aiding a worker to know the document's location.

J. Renew the list of files' titles regularly

List of files' titles is helpful to remind a person what contains each storage unit. When a worker is unsure of where to find a piece of paper, a glance at the index of each storage unit is more speedier and precise than rifling through an entire drawer. Once the files' categories and titles have been decided, create a simple file index and it must be renewed regularly according to the further and eliminated files in order to be effective.

- Attention to regular maintenance: the value of maintenance is high in the work area, as it keeps the system that is created for keeping and displaying the documents within a storage unit always works well.

We need to devote enough time for updating the storage system. For example, reassess the categories of documents, purge what is no longer relevant, and store old files in another place. Rearrange the file cabinet's drawers- if it is necessary, check the list of files' titles, etc.

In the case of personal storage system, it is better to maintain and clean it daily- if it is possible. As for the communal storage system, it might be maintained monthly, e.g. every six months.

4. Examples to apply the recommended tips

Case 1

When worker (A) needs to find a home for each paper within his/her own work area, we recommend him/her to decrease the paper amount as well as stretch the storage space. In order to achieve the mentioned recommendations, he/she needs to follow keys A, C, D, E and F (Fig. 4).

Worker's need	Research Recommendations	
	Point	Key
1. Find a Home for Each Paper	(1.1) Decrease the Paper Amounts	Ⓐ + Ⓒ + Ⓓ + Ⓔ + Ⓕ
	(1.2) Stretch the Storage Space	

Fig. 4 The Needs of Worker (A)

Case 2

When worker (B) needs to access the files from his/her own work area easily, we recommend him/her to distribute the files as well as display them well within a workstation. In order to achieve the mentioned recommendations, he/she needs to follow keys A, E, F, G, H, I and J (Fig. 5).

Worker's need	Research Recommendations	
	Point	Key
2. Access the Files Easily	(2.1) Distribute the Files	Ⓐ + Ⓔ + Ⓕ + Ⓖ + Ⓗ + Ⓘ + ⓵
	(2.2) Display the Files	

Fig. 5 The Needs of Worker (B)

Case 3

When company (1) needs to find a home for each paper inside a workplace, we recommend it to decrease the paper amounts as well as stretch the storage space. In order to achieve the mentioned recommendations, it needs to follow keys A, B, C, D, E and F (Fig. 6).

Company's need	Research Recommendations	
	Point	Key
1. Find a Home for Each Paper	(1.1) Decrease the Paper Amounts	Ⓐ + Ⓑ + Ⓒ + Ⓓ + Ⓔ + Ⓕ
	(1.2) Stretch the Storage Space	

Fig. 6 The Needs of Company (1)

Case 4

When company (2) needs to find a home for each paper inside a workplace, we recommend it to distribute the files as well as display them well. In order to achieve the mentioned recommendations, it needs to follow keys A, E, F, G, H, I and J (Fig. 7).

Company's need	Research Recommendations	
	Point	Key
2. Access the Files Easily	(2.1) Distribute the Files	Ⓐ + Ⓔ + Ⓕ + Ⓖ + Ⓗ + Ⓘ + ⓵
	(2.2) Display the Files	

Fig. 7 The Needs of Company (2)