Logistic of non reproducible goods. The case of movements of work of art in the context of an artistic exposure. Specification of a logistic incomings model.

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Abstract

Nowadays, the flow of arts works is, worldwide, highly increasing. Indeed, the museums all around the world cooperate in order to show objects which are the reflection of an unknown civilization, an outstanding period of an artist, a particular theme… Within this framework, the logistic process seems to be an essential function even though it must be apprehended differently because, in this case, it is not based on the usual criterions of traditional logistic (best quantity, lower cost, good moment and best place). The purpose of this research, which takes part to a larger field (logistic of non reproducible goods), is to characterize the different steps during the movements of various types of work of art (painting, sculptures, costumes, jewels…) between the original institution and the final institution in the case of a lending during a temporary exposure. The methodological part of this work is based on face to face interviews with European museums (Le Havre, Paris, Munich and Berlin) registrars, curators, restorers, chiefs of reserves. The results of this study permit us to determinate the similarities and the differences between logistic of works of art and "classical" logistic, to build a model of this organization, to identify the links between the actors of the chain, to determinate the main constraints in terms of physical flow of the objects and to define associated information flows. This will allow us, in a future research rationalizing the logistic process and managing the associated risk.

Introduction

Nowadays, the flow of arts works is, worldwide, highly increasing. Indeed, the museums all around the world cooperate in order to show objects which are the reflection of an unknown civilization, an outstanding period of an artist, a particular theme… Works of art, unique, fragile and height pieces must be translated from a continent to another. Within this framework, the logistic process, defined as an activity whose aim is manage physical, informational and financial incomings of an organization, putting at disposal resources in correspondence with needs, in better economic conditions and for a determined service quality, in acceptable conditions of safety and security seems to be an essential function in works of art movement, even though it must be apprehended differently because, in this case, it is not based on the usual criterions of traditional logistic (best quantity, lower cost, good moment and best place). Indeed, art sector is governed by different foundations of these of classical marketing because, on the one hand, it is not based on consumer sovereignty principle and, on the other hand, concerned product characteristics (work of art) are radically different from those of usual consumption product. This research lie within a larger field: logistic of non reproducible goods. This framework will lead us to answer at the following question: what is the interest of the supply chain management concept and how can it be profitable for temporary organizations which are characterized by non reproducible products or rare products in a non reproducible situation?

In this program, the purpose of this first research will be to cartography works of art logistic circuit, mainly exploiting collected material during interviews with different actors of the chain (registrars, curators, restores…) in different European museums (Musée André Malraux (Le Havre), Musée du Luxembourg (Paris), Bode Museum, Hamburger Bahnoff, Neues Museum (Berlin), Neues Museum & Staaliches Museum fur Kunst und Design (Nuremberg) et Haus Der Kunst (Munich)). The purpose of this contribution is to characterize different steps during movement of different type of work of art (paintings, sculptures, costumes, documents, contemporary installations…). It is a matter of building a

model of this organization in order to identify the links between the actors in the case of a "nail to nail" work of art transfer, to determine mainly constraints in terms of physical, informational and financial incomings. Afterwards, this will allow rationalizing the process. Thus, we'll try in a first part to qualify the context of artistic exposures as well as associated logistic stakes. Then, in a second part, we'll identify the characteristic logistic answers found by the actors of the system, presenting a model of logistic incomings in case of works of art displacement. At least, in a third part, we'll attempt to propose reflection tracks in order to improve the process.

Stakes and impacts of characteristics of work of art exposures on logistic function

Theoretical and empirical justifications of the research investigation field

Consideration of cultural goods in economic theory

A large range of cultural goods exist. In accordance with article 1 of the convention of 1970 and article 2 chapter 1 of convention of 1995, cultural goods are considered as furnished or unfurnished goods, which, on religious or profane basis, are designed by each State as being important for archaeology, prehistory, history, literature, architecture, art or science, and which belong to intended in these conventions. Consequently, for some of them the support has no importance, essential parameter being copies original value (books, films, records…) whereas for others the value is due to the non reproducibility (paintings, sculptures…). We'll consecrate this study to the last type of cultural goods (non reproducible goods), non reproducibility characteristic being our research field specificity. A non reproducible good is defined as a one quantity available good (absolute rarity) or a slightly higher at one but answered in a unique situation (relative rarity). The value of a non reproducible good can not be linked to the necessary work to be produced, but depends on two factors: the buyer's propensity to pay (intensity of the person who covets the good) and its rarity. Moreover, this rarity notion is linked to the particular task difficulty due to the necessary know-how. The different medium taken into account in our investigation field will can be as divers as paintings, sculptures, contemporary installations, jewels, costumes, documents…

Analysis of art and cultural goods is remained in ignorance and unexploited during a long time by economics analysis insofar as this market does not enter in the field of pure and perfect concurrence of traditional economics models. Indeed, as a result of unicity of the concerned product, work of art, the concurrence, either substitutable product, does not exist. This lead Ricardo to say it was impossible to evaluate those. Marshall explains too that the demand for a cultural good is function of the good consumption (more we know a kind of musical style, more we are going to appreciate it). This makes going out this type of consumption of marginalist framework which is dominated by marginal utility. The foundation of Economy of Culture considered as a whole field is essentially due to Baumol and Bowen works, on alive entertainments and put in prominent a productivity differential for arts, Becker and Murphy works on addictive goods and Peacock's works on public choice. Within this economy of the culture, one of the study branches take over from economics analysis of cultural heritage, and particularly the role of museums. Indeed, museums have a double role: preserve works of art (preservation of cultural heritage) which are entrusted to them and expose them to the audience (diffusion of cultural heritage). Therefore, a conflict between these two museum function appears. Indeed, the preservation principles push museums to limit the exposures (exposure damages works of art) and, conversely, exposure imperatives comes from the will to allow the audience having access to essential works of art of different cultures and so imply to large exposures of well known artists who can attract a maximum of audience. Consequently, it is essential to understand the role of each actor (directors of museums, curators, exposure commissaries…) and analyze the balance between these roles. In any case, a common feature between cultural goods is that they come from, a priori, economy of production: the supply proposes and the demand disposes, even if it seems that for a substantial part of them, the choice of the creation is based on the possibility of creating a demand. However, the success (i.e. the demand) for a given cultural good can not easily be predicted, even by specialized agents of the sector. This characteristic comes from the nature of these goods (pure experience goods

or prototypical goods). Thus, the characteristic of "unlimited varieties" of cultural goods combined with uncertainty imply that, for cultural goods, a more or less marked concept of reverse channel exists in the sense that the supply (i.e. the production) always makes a personal choice without dealing with the demand. Relating to the demand, we can notice that cultural goods consumption depends on the existence on specific economics factor (the assessment) which is directly linked to a received education to appreciate these goods. This factor is viewed as a kind of capital which accumulates with cultural goods consumption, which is associated with phenomenon of rational addiction.

Increasing importance of exposure of cultural heritage

Until the beginning of the nineteenth century, museums are only opened for apprentice artists who come for copying well known works of art. From 1890, museums begin to receive an educative mission but the opening to a large audience is very slow and lived with a lot of reservations. However, forty five years ago, UNESCO has adopted a recommendation dealing with "the most efficient possibilities to make museums available for all". This text recognizes museums as having a role in intellectual and cultural population's life and an educative mission. This text recommends better museums accessibility for each category of the population. This text generated the realization of different actions (open free days, improvement of infrastructure and diversification of museums activities…) in order to facilitate the access of the culture. Consequently, since twenty years, frequentation of museums has blowed up. This run up has consequently led a worldwide intensification of works of art circulation due to two phenomenons: in one hand, the multiplication of cultural cooperation program and, on the other hand, the increasing number of thematic temporary exposures all over the world. These artistic exposures, which will constitute our sphere of activity, nowadays are part of the usual supply of museums and generally comprise works of art of other establishments. In an economics point of view, the existence and increasing importance of these exposures set a double problem: in one hand, as they mobilize important means, this contrasts with the austerity financial measures set up by all the museums even the most famous and, in the other hand, the circulation, the manipulation and the exposition to a large audience of particularly fragile works of art do not agree with the preservation mission of museums. Moreover, these exposures presents income elasticity higher than unity (>1), this means that the number of paying visitors for such exposures mechanically increase with incomes. For this reason, the market of such exposures increases as long as incomes increase. Furthermore, these exposures attract in museums category of population which usually don't visit them. Exposures reassure the non familiar with art audiences about the quality of what they are going to see (these exposures being renowned as denser in masterpieces than permanent collections) and about the existence of a didactic system which allow understanding exposed works of art. So, today, higher exposures can be a sufficient reason to cross a country, indeed even a part of a continent. At least, the capacity of artistic exposures to attract to the museum many paying visitors and non familiar publics seem to be verified. Frey and Meier consider that if the raise of such exposures probably is going to slow down, they are going in the future constitute a significant part of museum activity and become a factor of integration of these institutions in market logic and a factor of opening up to a large public.

Impacts of the cultural heritage share on the prevention heritage processes

Following upon States fears about works of art prevention, during the numerous exchanges, several precaution processes have been applied: The marking (each object of a collection must bear an inventory number allowing its direct identification and the access to its sheet), the removal of dust (the accumulated dust after manipulations or long periods of storage can causes different damages according to materials: paintings lose its colours, flake off and the surfaces show sign of wear, the woods are victims of xylophages insects installation and mould appearance) and the photography (which is necessary to identify each object or for different publications as catalogues, promotional documents or exposition posters). More over, museums have also applied measures for traceability of works of art as resticking (consists in identify each object, localize it, determinate its characteristics (weight and measurements), verify or make the marking and evaluate its state) or work of art state report (consists in collecting information on objects physical state). Thus, as we precise, the rushes of cultural authority to the way of culture accessibility for the most numerous populations imply for museums to organize more and more artistic exposures answering to this educative mission, putting at

disposal art objects in a didactic way for a more or less informed public. We'll make the choice of this context of temporary exposures because it generates in many cases a works of art displacement and imply a particular logistics. To specify the context in which this research lies within, we must now define what an exposure is in the organizational meaning.

The context of artistic exposures

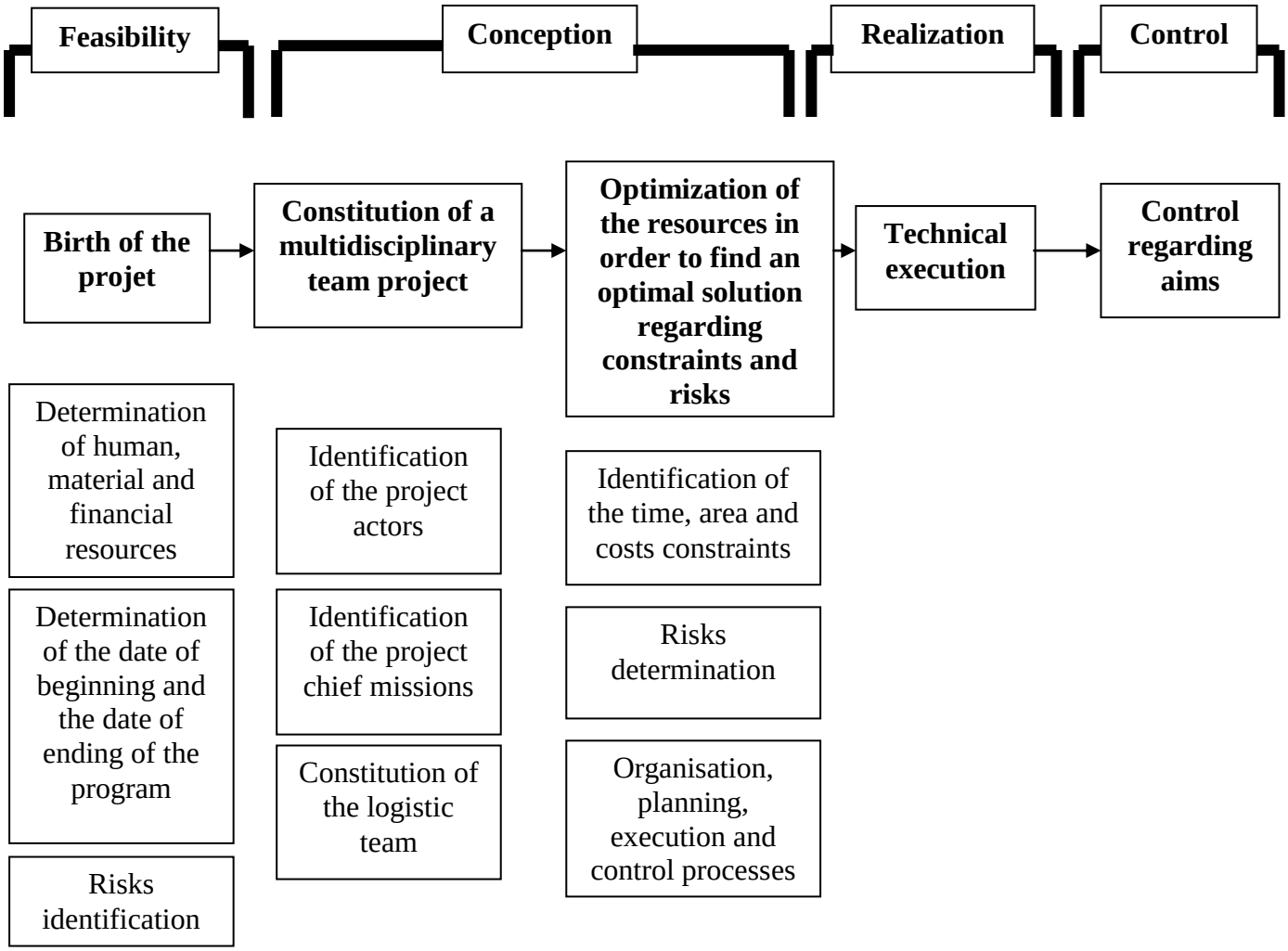
Organizational characteristics of an exposure

Contemporary period often speaks about exposures and less about art or works of art. Speaking about exposure allows changing viewpoint: by this way, it indicates moments or specific events, defensible and assumed choices and art is no more in the first place. We renounce to know if showed objects art work of art but what are we doing with these objects. We want to know what we really wish transfer to the audience, in such moment with such objects or work of arts. What is important is the meaning which is ascribed to the objects in a specific context. Artistic exposure can be specified by its temporary characteristic (an exposure has a limited duration with a beginning and ending date) and its formal characteristic (an exposure is a legal organization juridically constrained by all the contracts which link actors between us (royalties, reproduction rights, representation rights, photography rights during the exposure, for instance)).

Exposure viewed as a project

The ephemeral characteristic of artistic exposure, as we précised before, lead us to define it as a project, i.e. as a combination between human, material and financial resources shared in a temporary organization in order to reach a specific aim (Pinto & Slevin, 1988). Project characteristics are (Turner, 1993): a project is born in order to bring to a problem a solution or to an opportunity an answer, a project is unique, a project includes time, budget and resources constraints and a project is temporary because it includes a beginning and an ending date because the result is peculiar to the project. Thus, a project can be regulated by a development plan or planning, what divides its progression up by constraints, limiting it to determined aims and parameters. Project planning, execution and control imply the deployment of a temporary organization, requiring human and material resources and consists in a project team and one or more highly specialised and interdependent working teams allowing adoption of integration mechanisms in order to accomplish in the best ay activities, strictly respecting the constraints (Adams & Kirchof, 1981). According to Kezner (Kezner, 1992), project management is an organizational, planning, execution and control process in order to reach specific aims associated to the project. Thus, project management imply, in one hand, the construction of a highly organic temporary structure, able to react quickly, to facilitate integration and horizontal and vertical communications and, on the other hand, application of specific techniques in order to reach predetermined aims dealing with area, cost, quality and beneficiaries satisfaction. At least, project management differs from traditional management by various elements (Cleland & King, 1993): usually responsible of aim fulfilment, the direction assumes more a role of support to the project team, usually rather vertical, work relation within a project team becomes a relation between manager and experts and generally rather divided and permanent, the structures favours multidisciplinarity and temporality.

Artistic exposure viewed as a project



Associated purposes of an artistic exposure

The mounting of an artistic exposure, viewed as a project, thus consists in planning, organizing, leading, and controlling accorded to accomplish the project (event success) whose ensues subordinate purposes as: respect of the accorded budget, respect of the time constraints, safety of works of art, security of works of art, the exposure mounting according to artist wishes and audience satisfaction.

Nevertheless, we must also consider own aims of the project leader which can differ from general aims of the project. In the case of artistic exposure, curators intentionalities can overhang cited aims. Curators' intentionalities can be explained according to three axes: cultural (as we explained before, curators must fulfil an educative mission within the framework of public accessibility to culture and answer to this mission can be a reason to organize an exposure project), marketing (the curator can also envisage the organization of an exposure with a commercial aim. Indeed, an exposure can be the way to generate additional resources for the museum, to beneficiate of an access to unusual medias thanks to event media cover which allows increasing museum notoriety) and politic (at least, an exposure also provides to the curator the opportunity to demonstrate his expertise in artistic aspects fundamental aspect for his career prospects and for the acknowledgment by his peers).

After having defined the context of work of art, we can envisage first to characterize associated logistic to this context, and afterwards to build a model of the incomings of works of art displacements, in the framework of an artistic exposure.

Model's building of displacement of a work of art logistic incomings within the framework of an artistic exposure

Supply chain management of an artistic exposure

The actors of the chain

Artistic exposure considered as a project use a systemic approach in which specialists of various functions are allotted to a specific part o the project under peculiar constraints.

The different specialists intervening in the "work of art displacement" facet (logistic center) are numerous. First, the curator of the original institution is solicited by the curator of the final institution in order to consent the lending of one or various works of art. He signs documents allowing the work of art leaving from its institution. The curator of the final institution manage all the exposures facets, included the logistic facet within this context, he solicits various structures in order to acquire necessary works of art for his event success. Then the works of art restorer provides the rehabilitation and the conservation of works of art and cultural objects. Within the context of work of art movements, he intervenes as an expert and participates as a technician to write the work of art state report at the departure and at the arrival. Moreover, when transaction is an international one, a custom authorization is necessary in order the work of art can leave its territory and a territory leaving authorization is lodged to request with Minister of Culture. During work of art displacement, the institution of destination must contact an insurance company in order to subscribe a contract to secure works of art. The haulier is in charge of the transportation. The chief of the reserves manages the work of art storage in the institution and makes sure that climatic, hygrometric, luminosity and non infestations in the museum reserves are respected. Finally the registrar is in charge of practical and legal aspects of object management in the museum. This can include inventory, localization, lending, insurances, exposure organization, transportation, storage, booking, acquisitions. He oversees the whole documents of the work of art displacement (work of art state report, transportation documents, insurance and custom contracts…). Thus, the registrar is an applied works of art movements risk manager. He is too a revealing of new modes of organization in the museums which begin to integrate the notion of logistic performance.

Impacts of the recent evolutions of the sector on the aims and the choices within the context of movements of works of art

This peculiar sector of works of art logistic has known in the last years four recent evolutions: museums implications in prevention of works of art against damages, techniques sophistication, domination of Emergency and increasing public regulations, particularly for security. Today works of art displacement specifications as well as associated logistic competences rise up (registrar's conferences, work professionalization…). Works of art specificities compels the use of peculiar logistic methods (conditioning systems, trucks equipments…). Works of art displacement is subject to following constraints: prevention against works of art damage (safety), prevention against theft (security), respect of the delays and the cost control. Logistic choices are also determined by the kind of work of art (painting, sculpture, photography, document, contemporary installations…) who must be displaced, departure and arrival places of exposures. These different needs are accompanied with the creation of specific tools allowing data computerization and more efficient mode of exchange. News functions emerge and consequently a real specialization of the supply chain tools. Practices in this sector advance toward the tools specialisation all along the logistic chain and consequently toward organization and planning tools. Tools which are developed in this sector mainly concern collection management and consist in documentary data basis which allow tracing works of art life. Between the tools we can cite: CEOPS, Documentary basis EROS, Actimuseo, Emu, SKINmuseum and Micromusée, GCOLL. These softwares are data basis for the whole works of art information. Only GCOLL introduces a collection management module with a beginning of planning method.

Displacement of a work of art within the framework of a temporary exposure logistic model

Within of this exploratory research, the purpose is to define mainly constraints in terms of physical and informational incomings applied to works of art displacement, then to cartography the different steps in the context of a nail to nail displacement in order to define the essential criterion of this system.

Work of art characteristics

As we précised before, a work of art belongs to the non-reproducible goods. Some of the work of art characteristics stem for this belonging or specific to the object, must be determined because they have impacts on logistic constraints within the framework of displacement: work of art uniqueness is the essence of the non reproducible characteristic. The "hic and nunc" (here and now) of a work of art constitute its authenticity. This uniqueness characteristic constitutes its distinctive sign and which implies its value. The second characteristic is its inestimable value. According to Ricardo, the value of works of art is only determined by their rarity. And the third characteristic is that work of art ore often made in alterable materials, subject to physical alterations and make them fragile and destructible. These possible alterations associated with the rarity imply the set up of peculiar prevention principles. These characteristics allow us restrain our research field, between the non reproducible goods, to those who are transferable and constituted in physical material. Thus we exclude of this research works of art as installations, land art or happening.

Conceptual framework of the research

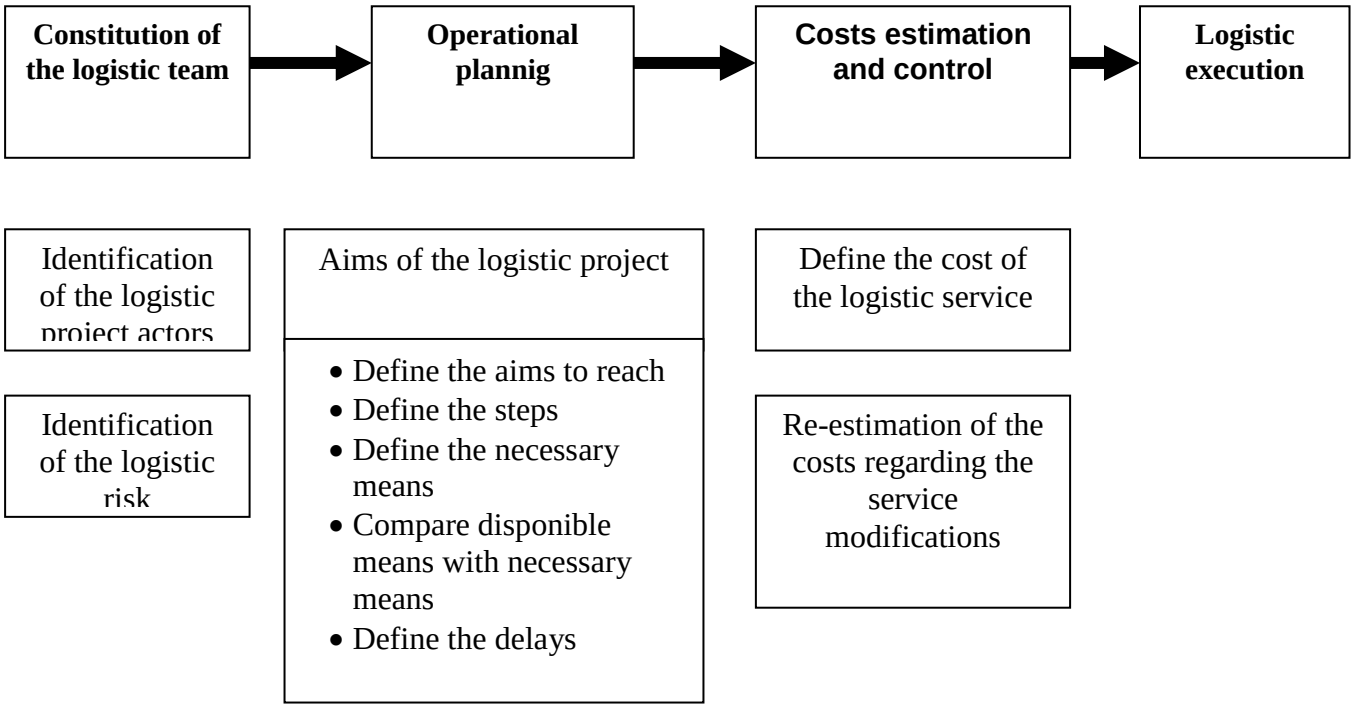
An exposure is an event project whose preparation time can be evaluated between six months and two years according the weight of the event (place, number o works of art to displace…). This preparation consists in realize movements plans and administrative documents. The organization (event realization) exists at the moment when exposure project is displayed in an explicit way (dates publication, promotion campaign...) *(step one).*At this moment various actors gather round the project leader (curator) in order to realize the common purpose *(step two).*The tasks are divided between the members of the group under the orders of the project leader who plans operations progress *(step3).* The exposure itself is the following step *(step4).* The exposure finishes when financial accounts are closed, the commitments taken toward partners are closed and works of art are retuned in their institution o origin *(step 5).*The acquired experience during previous exposures, particularly in logistic domain can allow accumulate knowledge, even if it is minimal, due to the situation reproducibility and ca be used again, in terms of logistic solution, in another exposure, to ensure event success.

Over the project concept, exposure organization imply the notion o supply chain, as Tsay & al. define it, i.e. as a group of two or more firms, linked by physical, informational and financial incomings (Tsay and al., 1999). Indeed, the temporary exposure presents required characteristics to assimilate it to a supply chain, i.e. that it defines itself in relation to a product (the exposure), it needs various organizational units (plurality of the actors), linked by three kinds of incomings: physical, informational and financial. Logistic exposure can be considered as a project logistic which begins when the team is constituted and finishes when commitments are closed and works of art returned.

Viewed in classic ay, logistic process allows ensuring the coherence of the different production units of goods and services, in order to optimize the financial, physical and human resources allocated to the realization o economics aims and improve firm productivity. At the scale of the exposure, logistic process allows ensuring homogeneity between the different missions of preservation, exposition and diffusion in order to optimize cultural supply, i.e. succeed to control incomings while favouring accessibility to the collections and keeping as permanent purpose to manage the movement with no risk and succeed artistic operation. Worldwide works of art lending intensification, increasing exposures complexity and increasingly interest in cultural heritage implies various questions about the temporary expositions costs, the control of delays and the management system during works of art movements. Nevertheless, in this context, safety, security and control of the risk due to product specificity prevail over costs. Indeed, the characteristics of works of art displacement within the framework of the lending from one institution to anther are: temporary, but whose time limits are strictly fixed, multidisciplinary, because it requires mobilization of various agents whose actions must

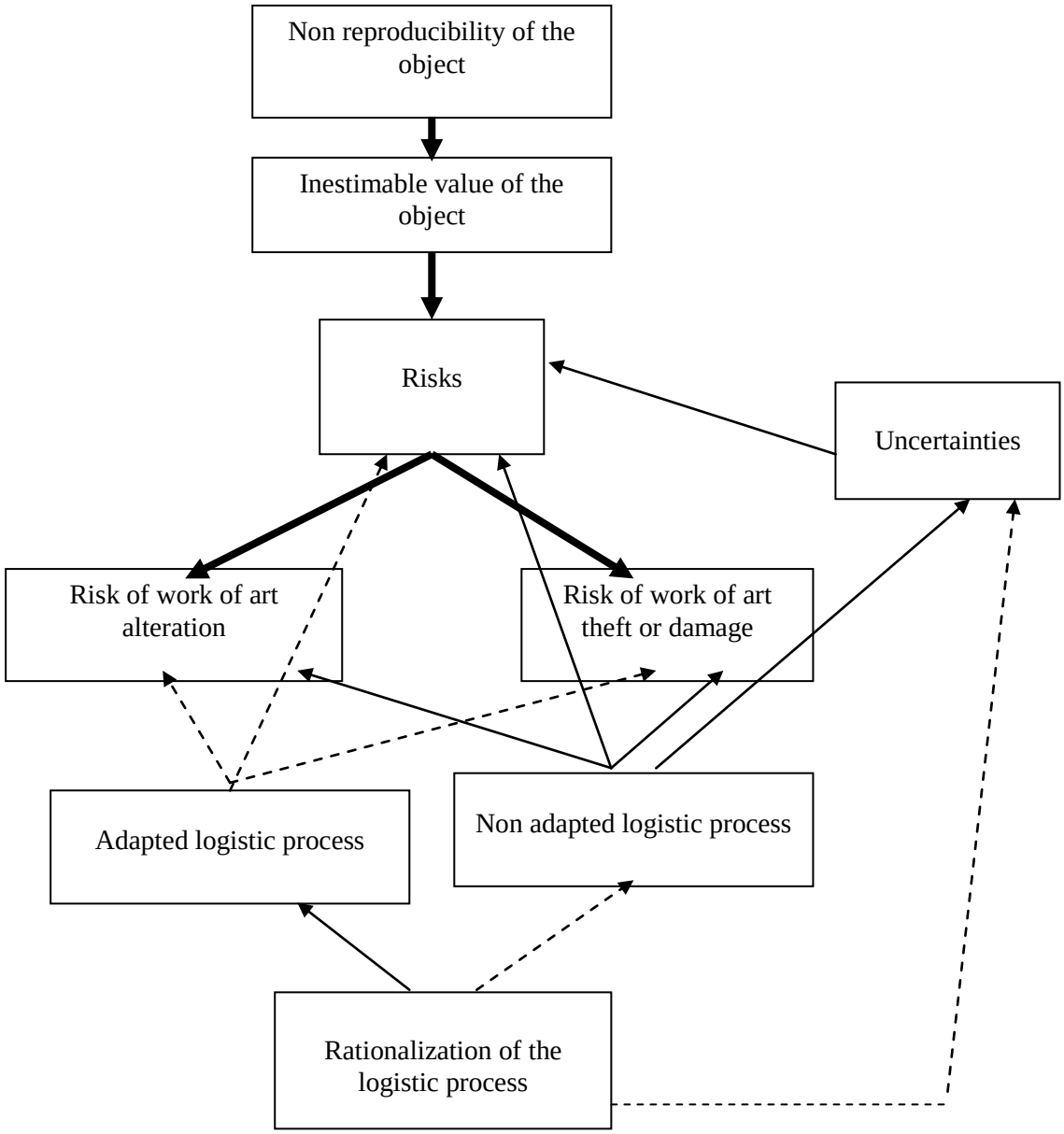
be coordinated, exceptional, due to the factuality of the event and risked, due to characteristic of non reproducibility and subsequently to the value of the displaced object, which implies consequences in terms of safety and security during the movements. Therefore, during works of art displacements within the framework of an artistic exposure, logistic appears as a key factor of the event. Registrars, responsible of this facet, have developed know-how and process to control these logistic situations. This registrar pilot temporary and risked supply chains which needs clear answers and guarantees in term of insurance and delay and mobilize various partners according the project (kind of work of art, kind of exposure). Thus, the logistic of work of arts displacement within the context of artistic exposition can be considered itself as a project (the logistic project) subordinated to the whole project (exposure organization).

Setting of the logistic project



Moreover, risk is inherent in all projects. Risk designs condition or an uncertain event coming from a cause and, when it occurs, has a negative effect on the projects aims and a consequence on costs, delay or project quality. The context of this research, works of art displacement in the framework of artistic exposure, can be considered as risked due to the nature of the object (work of art) and object associated characteristics (inestimable value and non reproducibility). The incurred risk can be explained according two eventualities: risk of theft or damage (intentional acts) which have logistic consequences in terms of safety (installations, transportation) and risk of work of art alterations in case of bump, non respect of climatic, hygrometric, luminosity or infestation conditions (unintentional acts) which have logistic consequences in terms of security. This risked context inevitably implies uncertainties which involve some stress for the various actors of the chain. Each actor of the system has developed, during passed experiences, works of art logistic answers in order to reduce this uncertainty and associated stress. Nevertheless, as we mentioned previously, a whole apprenticeship effect is not possible due to the exceptional characteristic of an exposure project and to the unicity of the project.

Risk, central element of the work of art displacement



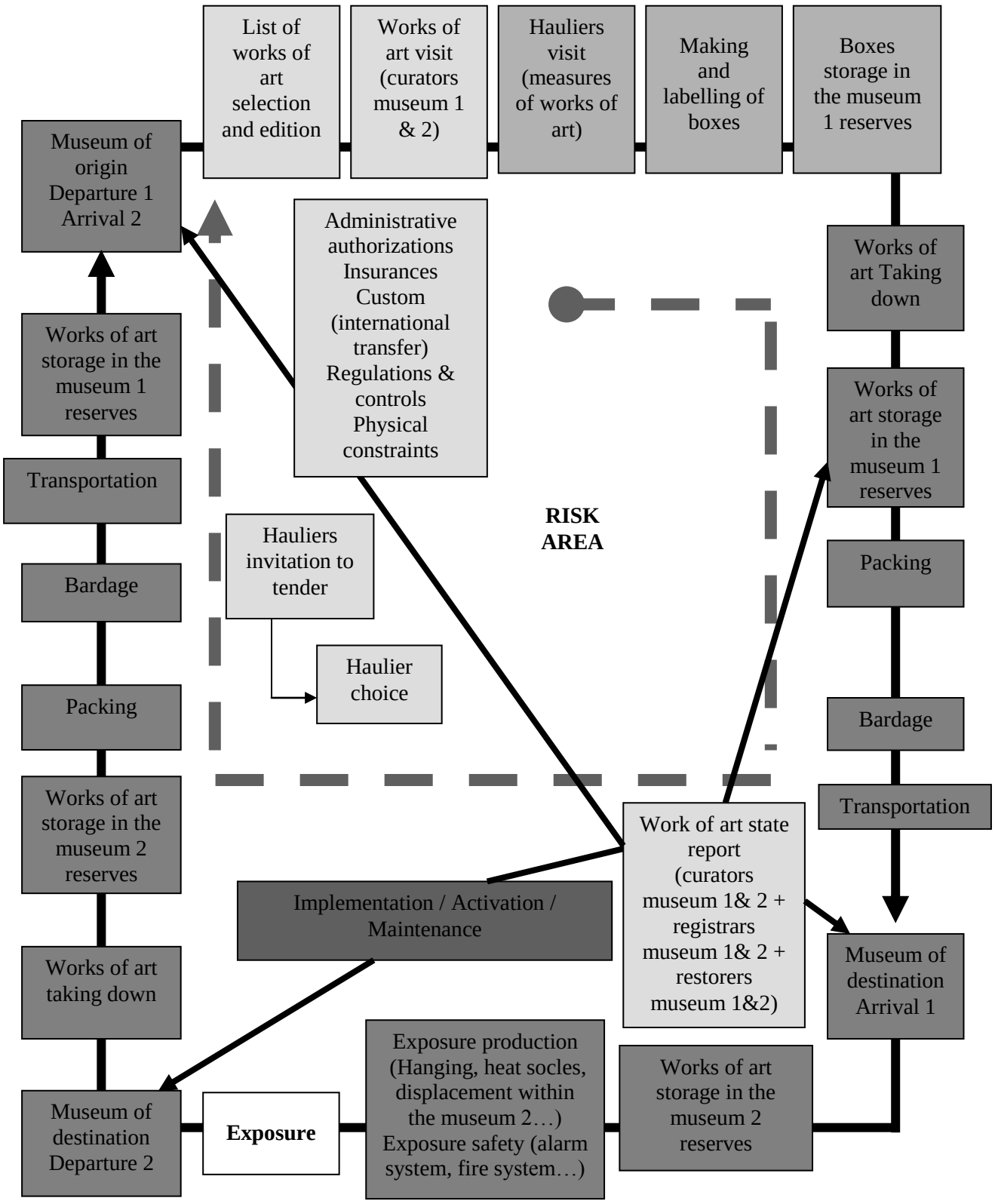
Conceive works of art displacement logistic is an integrated logistic support approach (Fabbe-Coste & Lievre, 2002). As such, logistic must allow reaching aims, anticipating from the project conception, success conditions and trying to control risk in the better way, taking into account each displaced work of art specificities, exposure place characteristics, logistic project team and allocated means.

Proposition of a logistic incomings model

With the purpose to identify the works of art displacement steps within the framework of an artistic exposure, this exploratory research has been lead by means of individual interviews. This study has been realised in 2010 with 12 actors of the chain (a general registrar, four registrars, a restorer, three curators, a chief of reserves and two specialized hauliers) in France and Germany (Musée André Malraux (le Havre), Musée du Luxembourg (Paris), Bode Museum, Hamburger Bahnoff, Neus Museum (Berlin), Neues Museum & Staaliches Museum fur Kunst und Design (Nurember) and Haus

der Kunst (Munich)). The purpose of the used questionnaire was to define role and aims for each actor of the works of art displacement logistic project. In the framework of a work of art lending from a museum of origin (museum 1) toward a museum of destination (museum 2), in France or in Germany, it appears that, at the exposure level, the curator is the project leader. On the other hand, the registrar is the logistic project leader. Physical, informational and financial incomings management is between his hands. Indeed, when they receive the lending request, containing works of art request specification and a conformity report of the exposure place, restorer (technique aspect), curator (artistic aspect) and registrar give their agreement or not. From the agreement, a lending sheet is created, associated to a contract specifying packing and transportation, and work of art state report is established. These documents are downloaded in the works of art information storage software, when museum have one. An invitation to tender is send to select adequate haulier. Once he is selected, the haulier will be put in charge of taking the measures in order to realise adapted packings for transportation. A leaving territory authorization is required to the Minister of Culture and custom and insurance contracts are written in order to guarantee the lending works of art. Days before expedition, the works of art is taken down, stored in the reserve and packed (tamponage and putting in box). Then it is the transportation and conveying from museum of origin toward museum of destination. In some case, the registrar or the restorer can accompany works of art during the displacement. When the museum of destination receives the work of art, it stored in its reserve during two or three days, then it is laid out in the presence of escort ship. An intermediary works of art state report is established before the hanging for exposure. The hanging is realised by museum of destination employees in the presence of the artist himself or according to a photographic protocol with exposures conditions required by the artist and by the museum of origin. At the end of the exposure, the work of art follows the reverse but similar way. With regards to logistic part of the project, and at first, concerning the works of art traceability, it appears that, at present, and particularly in Germany where inventory is not a legal obligation, all the museums are not fitted up with software which allows constituting a data basis for collecting works of art information. Even less, museums are fitted up with a organization and planning tool in order to optimize exposure organization or inside museum displacement (in case of restoration or renovation, repair and building work of the museum). At least, as far as control tools are concerned, visited museums or institutions have not at present, quality process tools. The only way for museum to control quality is the work of art state report and respect of the delays acknowledgment by the different actors of the chain. Thus, in these conditions, apprenticeship effects and consequently resources optimization can not be envisaged. On the other hand, it also appears that there are numerous informatics tools and this does not allow having a homogeneous data basis, neither getting a common tool at European or national level.

Logistic incomings model of work of art within the context of a temporary exposure



Results and ways of research

Similarities and differences between exposures logistic project and classical logistics

Success key factors for works of art displacement
As we could notice previously thanks to the developed model, two key factors success seems to emerge from works of art displacement applied logistics. The first key factor of success is anticipation toward transportation, place, hanging and taking down uncertainty. Preparation, and so planning, thus is a crucial step because access difficulties, variations of climatic conditions and temperature, works of art exposition possibilities must be anticipate. Anticipation also depends on individual and collective apprenticeship (specific methods). In this case, registrars' previous experiences are determinant. Experience transfer allows saving some time. Then, the second key factor of success is reactivity towards unexpected circumstances which is decisive in this context, due to object specificities (non reproducible goods) and incurred risk this situation.

Similarities
Logistics is defined as an activity whose purpose is to manage physical incomings of an organization, putting at disposal resources in correspondence with need, economics conditions and for a determined service quality, in safety and security conditions. Logistics is also a management function. Logistics manage physical incomings and consequently associated immaterial information and financial incomings. In this way, works o art displacement logistic management is similar with classical logistics: it manages moving objects incomings, the whole associated documentation and financial transactions.

Differences
Nevertheless, it appears that works of art logistics has some specificities. First, cost is not a significant element. Thus, if we strictly confine in the classical definition, i.e. logistics is the whole activities which allow putting at disposal the right quantity, at the lower cost, at the moment and the place where the demand exists, we can see that the condition "at the lower price" is not respected. In the other hand, as we mentioned previously, due to the specific characteristics of the objects, security and safety notions are oversized regarding to a classical logistic project. At least, works of art displacement associated logistics takes on exceptional characteristic because it depends on a temporary project. This implies it is difficult to use again the solutions deployed for a specific event (difficulty to take advantage of the apprenticeship effect)

Identification of the works of arts logistic failures

The purpose of this research was to cartography the different steps of the work of art displacement in the framework of a movement during an artistic exposure. We could see that, despite of the intensification of works of art exchanges, registrars, leader of the logistic project, had fewer tools in order to optimize these displacements. Now, it is time to identify failures which can be committed in order they can be a basis in the determination of performance criterions in a future research.
According to Clouteau, committed failures in the context of works of art logistic can be classified in three categories: works of art prevention, movements and exposition.

Works of art preservation
The works of art preservation designs the whole missions regarding to keep works of art in a good state. This sector applies from climatic conditions control to storage reserves maintenance and transportation conditions, the purpose being guarantee works of art integrity and availability.
Committed failures in this sector consist in preservation of works of art associated documents, packing and storage failures (atmospheric condition of the reserves, possible work of art contamination by another…). These sector failures directly concern work of art physical integrity.

Eliminate these failures consist first, in the updating of a data basis because failure in this sector is often the fruit of a work of art information lacking, but also in the prevention of the incurred risks which can occurred in the reserve and in the exposure place itself.

Works of art movement
Works of art circulation designs the whole tasks, from displacement preparation, the logistic, to transportation itself. He spreads from the work of art reception for an exposure to the lending for others structures. These failures concern works of art physical integrity (bad packing, case of fragmented sending…), but also the respect of the legislation (forget to check an insurance contract, for instance)

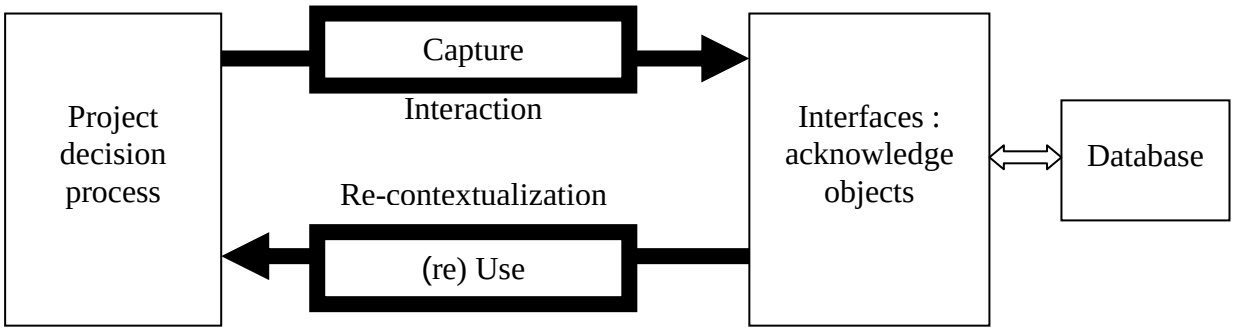
Works of art exposition
The exposition consists in works of art exhibition, i.e. the whole operations concerned with the hanging, the installation and the montage which must be realised according to artist and curator intentions in the respect of the public safety conditions. Committed failures in this sector are due to the lack of reliable information. Indeed, registrars must often install a work of art by from previous exposures photographies and reproduce a peculiar point of view. Failures in this sector concern physical and moral work of art integrity but concern also public safety. Solve these problems goes through the control of place of exposure conditions, the ability of identify constraints, time management, uploading of the expositions documentation. It also requires knowledge about safety norms and public accommodating conditions.

From the identification of these failures, we will be able to wonder, in a future research about various points: first, the question of the responsibility? What are the actors responsible of the failure? Second, what are the consequences of these failures? And third, what protocols can be envisaged in order to reduce risk? As comments Clouteau, the failure can only be thought for one situation and an adapted solution had to be found: "if it is legitimate to keep paintings in the best conditions as possible in order to expose them again, conserve a photography belonging to a Kosuth Blow Up has no sense because the photography must represent the object in situ, i.e. in the exposure itself where the object is installed".

Reflection tracks

Deployment of acknowledge management system
The project, viewed as a temporary organization, implies that at the end, the team project scatters. Only remain the results, necessary social links for transmitting know-how acquired during the project are broken by the actors physical separation. Thus, we must envisage to set up a acknowledge management system based on the creation and the re-contextualized re-use of acknowledge linked to the decision in order to allow registrar being able to take advantage of this apprenticeship effect, event if it is not total.

Acknowledge management system



Transferability of project management tools to project logistic applied to works of art
Within the context of the project, we can make the difference between two kinds of logistics: the documentary logistics, regarding to informational incomings and the material logistics, regarding to physical incomings. Both take place, at different levels, in each phase of the logistic project and concerning all the actors. Documentary logistics consists in various documents diffusion toward each actor of the chain. With the actors' multiplication and increasing project complexity, which consequences must be passed accurately on various documents, documentary logistics took a determinant importance. This justifies the creation of specialized department attached to project management. These departments use more and more often specialized software and their methods look alike to documentation department methods. Material logistics is mainly applied during two phases of the project: supplying and the execution, what we can translate in our context by works of art hanging and taking down. it relies, from study phase of the project, on the operational planning. Project logistic has developed management tools which allow improving planning and execution task control. It will be a matter of studying in a future research if these various project management tools are transferable to logistic project within the framework of work of art displacement in order to set up a quality approach in the supply chain, developing adapted organisation (acknowledge management) , planning, scheduling and control (performances evaluation) tools.

Risk management
Each project must be associated with a quality approach and, within this framework, risk management becomes a priority, particularly in the context of our investigation field, due to the concerned object specificities. Thus, at least, it will be a matter of, in a future research, studying risk management within the context of works of art displacement in order to reduce at the maximum uncertainty and stress actors' level and to optimize anticipation and uncertainty, factors that we previously identified as mainly key success factors of logistic project in our context study. Logistic risk management can be envisaged differently according to the phase of the logistic project in which he intervenes. Indeed, in the logistic feasibility study, risk management consists in identifying the risk (nature, origin and risk consequences), measuring this risk (probability to occur) and envisaging eventually insurance). In the execution phase, we must follow identified risks and determine eventually new risks. At least, in the capitalization phase, it will be an advantage to identify what have been the right management risks methods and what are the main difficulties. This will allow developing experience and acknowledge in the future projects.

Conclusion

In this exploratory research, we wished open a new field of research to exploit: logistics of non reproducible goods. We have defined our investigation field associating various disciplinary fields came from economics and management sciences. This allows us to state the fundaments in order to develop logistics theoretic corpus. The context in which has been lead this research let us appear that logistics is success key factor during exposures organization. Thus, practitioners have developed specific know-how in this context. Nevertheless, as we showed, these principles are still rudimentary and the worldwide intensification of artistic exposures associated to increasing regulations regarding works of art prevention let appears that the development of specific tools in this field would be interesting to study. Moreover, we showed in this exploratory research that it exists similarities and differences between classical logistic and works of art displacement associated logistics. Consequently, in a future research, we will try to extract organization principles from classical logistics to adapt them to works of art logistic. At least, this research allows us characterizing projects that are artistic exposures and proposing a model of logistic incomings associated with these exposures. Thus, these exploratory first results incite us, in one hand to follow exploring this research field in the ways we previously explained, and in the other hand to envisage the study to related fields, enlarging application fields to other non reproducible goods and supply the theoretic corpus we begin to explore.

Related application fields

Product specificity	Logistic impacts	Related application fields
Unicity	Safety	Great wines Racehorses (yearling) Organs
Inestimable value	Security	
Possible alteration of the product	Specificity of the displacement conditions (conditioning, hygrometric, infestation, luminosity…)	

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