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**„Innovative Performance of Organizations as a Result of their
Physical Environment”**

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1 Abstract

Whereas especially the German-speaking literature on innovation research is still predominantly neglecting the environment's influence on the innovation performance in general, the influence of the social environment has increasingly attained consideration within creativity research. However, whereas prior research takes into account the environment or the innovative or creative climate mainly with regard to social dimensions, much less emphasis has been put on the issue of the physical environment. Management practice shows a similar picture.

In this paper, besides social dimensions the physical workplace as an influencing factor on the innovative capabilities of organizations, corporate culture, and communication practice is examined.

Although based on an empirical basis investigation of industrial design companies in Austria and Germany, the paper is still of explorative character and attempts to ask provocative questions concerning the linkage between work, creative climate, and the physical work environment.

2 Introduction

What stimulates the innovative performance and degree of happiness of people? Traditional climate inventories for organizations are primarily focused on social dimensions and do not specifically consider the influence of the physical workplace. At most they include it marginally within other dimensions (*e.g. Amabile, 1996; Amabile and Conti, 1999; Isaksen et*

al., 1999; Isaksen et al., 2000; Anderson and West, 1994; Brodbeck and Maier, 2001; Brodbeck et al., 2003).

In this paper I point out some crucial purposeful roles the physical workplace can play within organizational lives for organizational creativity and innovative performance. Nevertheless, the physical environment should not be considered in an isolated fashion, but with regard to a systems thinking point of view as an interacting element of a holistic interacting set of influences on the wellbeing and, as a consequence, on the development of any organization. This involves the interaction of the physical workplace with social factors and other organizational settings.

Furthermore, I will point out the influential impact of the physical work environment on the well-being of people, their motivation, their individual and collaborative performances, their creativity, their patterns of communication, and the efficiency of the organization's work flows.

The empirical results of the underlying investigation of Austrian and German industrial design companies in the field of innovative product development largely supports the assumptions concerning the need for a stronger consideration of the working place and interior design in order to provide for creative support for individuals and teams.

3 The role of the physical work environment as one determining factor of organizational creativity and innovative performance

The attempt to isolate the influence of the physical work environment on organizational creativity and the innovative performance in general will certainly be misleading. By contrast, the physical work environment has to be seen as one single part of an environmental system which is further interacting with other systems, such as the collaborators and the project-related process that are also responsible for the creative and innovative performance of an organization.

In order to understand how the environment is affiliated within the creative problem-solving process, different explanatory models are available (*e.g. Amabile, 1996; Csikszentmihalyi, 1988; Ford and Gioia 1996*). Since those approaches do not consider in detail the physical environment, in the following a model for organizational creativity (What factors enable organizational creativity?) is introduced. This not only includes the creative process and the involved people, but also the different environments ranging from social and cultural to physical environments (see Figure 1).¹

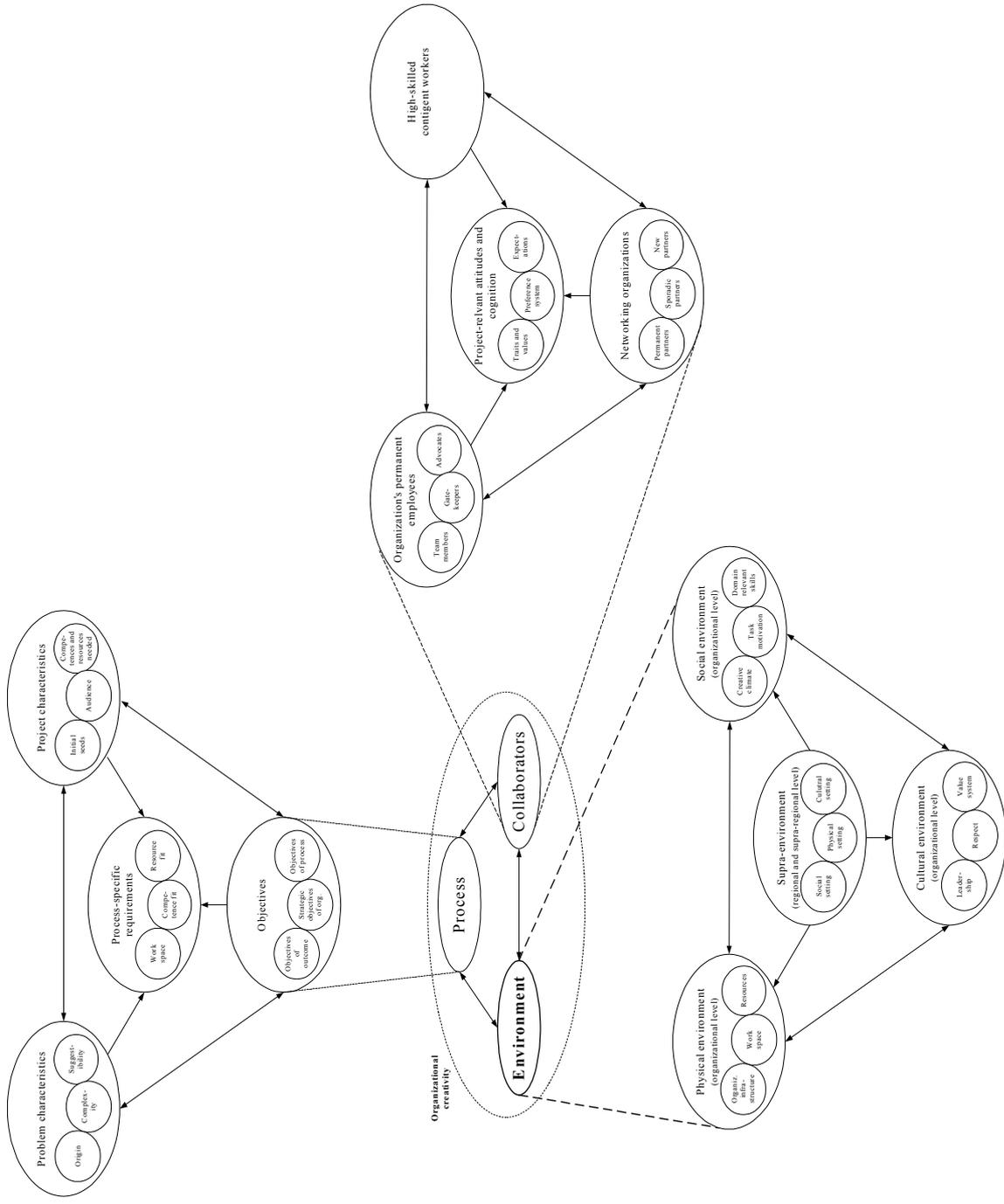


Figure 1: Model of organizational creativity and innovative performance

From a system perspective, organizational creativity not only incorporates collaborators and the project-related working process, but is always embedded within a specific work environment. The three subsystems of innovative performance (and organizational creativity) – process, collaborators and environment – are reciprocally interacting with each other and determine in this way the attainable level of the innovative performance of the organization based on its creative capabilities.

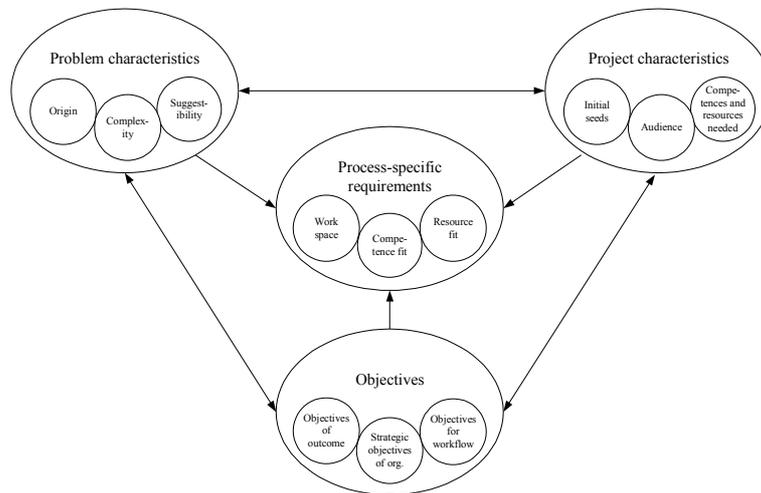


Figure 2: Project-related work process

The problem-solving process is influenced by the kind of problem given within the project, the particular project characteristics, and the set of objectives accompanying the process. Together this leads to a set of project-specific requirements with regard to the work space and a fit between process-specific needs for and actual available competences and resources within the organization (see Figure 2). In particular the process triangle describes the interplay between the origin, the complexity and the suggestibility of the problem (=problem) with the initial seeds for starting the project, the relevant audience and the competences and resources necessary for accomplishing a particular project (=project characteristics) and the set of outcome-relevant objectives, strategic objectives of the organization but also objective resulting from the particular workflow (=objectives).

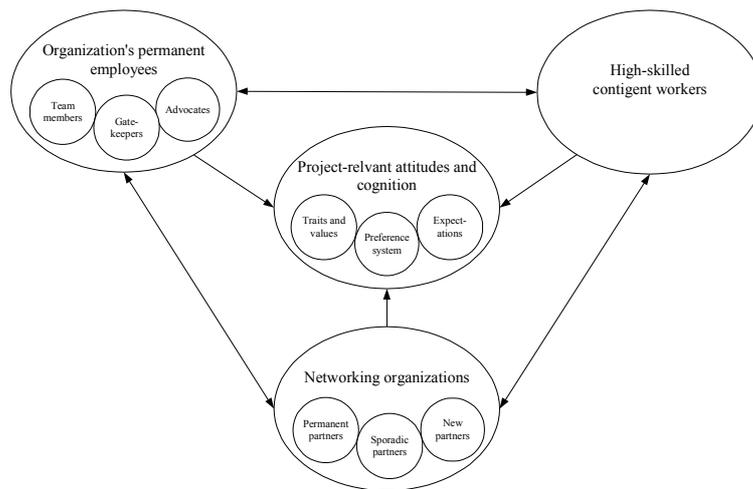


Figure 3: Collaborators

The collaborators of the innovation process are made up by the organization's permanent employees who work together with high-skilled contingent workers and other networking organizations and form together the project-relevant attitudes and cognition with regard to traits and values, preferences and expectations (see Figure 3). Hereby, the collaborator triangle is made up by regular team members, gatekeepers and advocates of the organization (=organization's permanent employees), diverse high-skilled contingent workers and other external permanent partners (e.g. industrial design companies), sporadic but also new partners (=networking organizations).

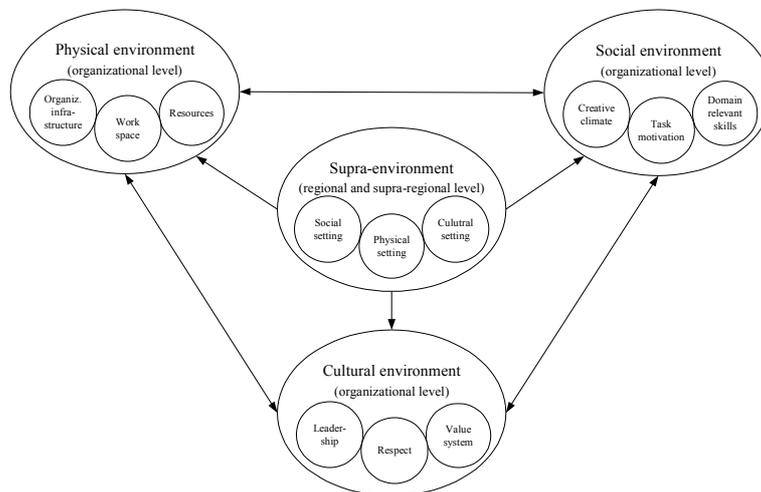


Figure 4: Environment

The organization's relevant environment is composed of its social, cultural and social environments which are themselves influenced by the prevailing supra-environment with regard to social, cultural and physical settings (see Figure 4). The environment triangle is particularly comprised of the specific work space, the provided resources and the organization's infrastructure (=physical environment), the creative climate, the task

motivation and the given domain-relevant skills (=social environment) and the prevailing leadership style, respectful atmosphere and dominating value system (=cultural environment).

After having pointed out how the physical environment is embedded with and reciprocally interdependent of other subsystems and elements in order to enable innovative performance and organizational creativity, some peculiarities of the physical work environment are now going to be considered in more detail.

4 Needed changes in the physical work environment

In this paper it is further presumed not only that innovation and creativity-relevant theory and research are to a large extent inappropriate with regard to concerns of the working environment and especially its physical dimension, but also that in the real world context of organizations the most traditional forms of physical work environments are inappropriate for supporting organizations in their attempt to create (radical) innovation. It seems that the physical environment is still mostly underestimated or even disregarded as a powerful strategic means for boosting the creative and innovative performance of organizations.

Whereas change is determining all facets of daily life and certainly also most fields of business, the physical work environment has not changed significantly. Furthermore, companies have invested intensively in infrastructure, buildings, and architecture, but without questioning their prevailing underlying paradigms.

Besides technological progress in the fields of computer facilities, technical communication, and applicable materials, the physical work environment has not shown impressive innovation itself. The physical work environment has therefore to be seen in interaction with other subsystems of the organizational work, considering occurring changes such as those within employment practices with the involvement of high-skilled contingent workers in the generation of innovation (*e.g. Kunda et al., 2002*). Since it is no longer just the permanent employees who are the dominating sources for creativity and innovation, the structure of the physical work environment also has to be rethought and if needed redesigned.

It seems to be necessary to rethink the functions and mechanisms of surroundings, buildings, offices and other workplaces, furniture, office equipment, and further technical facilities as potential supportive means for the generation of innovation, but also for the wellbeing in general. Examples of potential questions which need to be asked in further research are:

- Is the old division into work space and living space still appropriate?
- Do traditional rooms and workplace arrangements really support creative communication among the problem-solvers?
- Does a chair necessarily have to be something that is commonly understood as a chair?

- Do people have to sit closely to a table or might creative thinking be more supported by alternative forms of space such as is needed for kinaesthetic learning (see e.g. *Gardner, 1993*)?
- Is the work space also appropriate for more recent work forms such as contingent, contract-based work within the innovation process as (a shift from more or less tight to flexible working relationships also in the field of highly skilled work is gaining importance)?

In the following section the field of meaning and mutual interdependency is broadened by various aspects of social wellbeing in the organizational and inter-organizational context.

5 Physical work environment and social wellbeing

In order to thoroughly approach the system of the physical work environment from a scientific perspective, we have to ask what the term workplace is standing for, how its meaning has changed over time and what the system of a workplace is made of and how it is correlated with its environment.

By applying a process and output related perspective of work, it shows that a workplace as a place where a person is to work is not necessarily fixed to the physical environment of the employer or – if self-employed – to the headquarters of the corporation. Instead, depending on the kind of work, the work process might be fulfilled at various spaces such as corporate and also privacy spaces (i.e. the space where the person lives) but also at every other kind of space imaginable, stationary (for example, at the airport or in the café) or even in motion, for example on a flight or on the train (which can be considered as a kind of kinaesthetic learning).

5.1 The link between the physical work environment and an organization's culture

With regard to literature it seems to be a matter of fact that workplace culture and corporate culture in general are described purely by social dimensions, either based on employee surveys or based on a set of indirect indicators such as compensation packages, human-resource practices or employee perks. An example for the first kind of investigation is the Great Place to Work model which includes factors such as credibility (two-way communication, competence, integrity); respect (support, collaboration, caring); fairness (equity, impartiality, justice); pride (in personal job, team, company); and camaraderie (intimacy, hospitality, community) that influence trustful relationships in a workplace (*Wahl, 2006*).

What further possibilities are available to communicate and express a specific corporate culture or set of values, attitudes, guiding principles, and a corporate identity (see also Figure 5)? Generally speaking, culture-related values need to be lived by people, but can additionally

be supported by written and consequently readable forms such as a mission statement, spoken language applied within specific workshops or group work or face-to-face meetings, but also gestures such as the distribution of Starbucks gift cards to employees (for example, B.C. credit union Vancity as an outranging Canadian example of a corporation with a successful workplace culture (Wahl, 2006)). In addition culture can certainly be expressed by the physical appearance of an organization: Isn't it the physical appearance that gives the visitor or later employee the first impression of the organization when approaching? So if an organization wants to establish its own specific profile, isn't it obvious that one should also consider the way it is experienced with all different senses?²

The question which arises for research and organizations is how the physical environment with the organization's infrastructure, the work space and available physical resources have to be chosen and designed in order to fit to the organization's specific culture.

5.2 The consequences of (highly skilled) contingent work on the physical work environment

Especially the question of developments and changes in work forms opens up a whole list of new questions with regard to an appropriate physical environment. It is no longer only the skilled workers in an employment relationship with the organization that are the backbone of the corporation's innovative performance, but increasingly also skilled contingent workers in a flexible and contract-related working state (see Figure 5).

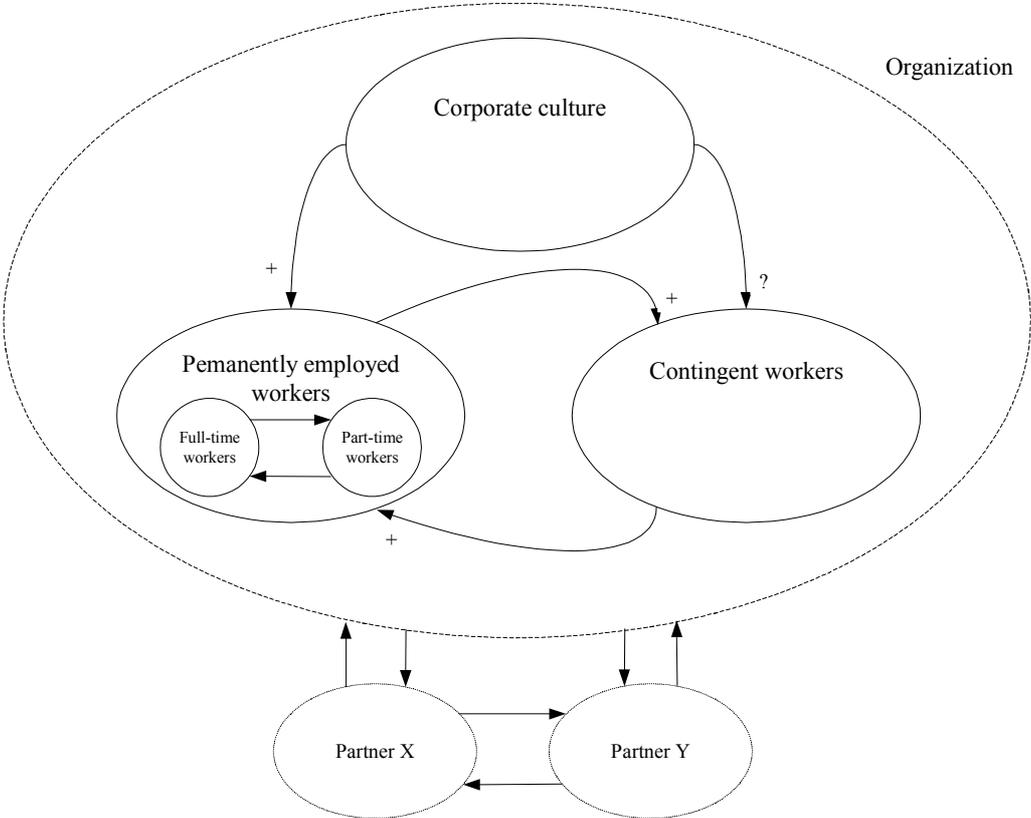


Figure 5: High-skilled contingent work as a source for innovative performance

Real world situations show the increasing importance of including contingent “knowledge workers” and other external partners in the innovation process. This is especially true for the generation of radical innovation with the inherent need to loosen prevailing paradigms. In those cases positive influence might be attained by people who are not stuck within the organization’s structure, but who are released from structural bindings (awareness is also needed for potential negative effects of such a work form, because of missing social safety). Nevertheless, permanent workers and contingent workers are working together innovations for the organization whose corporate culture is affecting both groups of workers, but to a varying degree. Consequently, it seems necessary to consider in depth those peculiarities when establishing a corporate culture!

Further, the innovative performance of a company is not only increasingly determined by contingent work forces (also often labelled casual work), but also by other external networking organizations. Hereby, those organizations may themselves rely either on “stable” forms of permanent employment or on a combination of highly skilled contingent workers and permanently skilled workers (either on a full-time or on a part-time basis).

The fact that physical space is needed not only for permanent workers but also contingent workers and other external partners to accomplish collaborative efforts as a team leads to an additional challenge for the arrangement and the design of the physical environment and its facilitating equipment. Since all parties are carrying responsibility for successful innovations it is also necessary to establish an environment – social, cultural and physical – that fits the needs of all parties. Hereby, it is not so much about creating the best imaginable environment, but much more an environment that fits the needs of the collaborators and the process-specific requirements as well (*Harrington, 1999, 325*).

5.3 The link between the physical work environment and organizational creativity and the innovative performance

Creative collaboration is the basis for the successful generation of radical innovation and especially needs a work environment that is more suitable for supporting the creative individuals or groups in their work. However, the generation of innovation needs – and this is a key issue – a work environment that fits to all forms of work that are part of the innovation process, creative and playful but also analytic and structured ones. Further, since creative performance is always connected to people the different needs of individuals and teams have to be taken into account.

Different needs are not restricted to the different needs of people, but also with regard to the different phases and segments of the innovation process itself. The generation of innovation is not only about creative performance on the involved people, it needs analytical logics and convergent thinking as well. Therefore, the physical environment also has to consider that side of the “innovation coin”.

6 Empirical support for the impact of the physical work environment on the creative performance

With regard to the importance of including contingent workers and external organizations into the inner-organizational innovation process as a means to boost the innovative performance, the role of industrial design is considered in the following section.

6.1 Who are the gatekeepers for arranging creative environments?

The underlying empirical investigation is based on a two-step process in order to get access to potential gatekeepers with regard to an active arrangement of an appropriate physical work environment for an industrial corporation among other creativity determining aspects (an extended international investigation is under work). In a first step 257 industrial firms were investigated according to their specific needs for external support for their creativity and innovativeness (the underlying data were compiled in 2003). Among the various other factors, industrial firms' expectations had a dominating focus on industrial design companies' creativity: 34 % of all industrial firms considered the creative capabilities of industrial design companies as the outstanding reason for collaboration, followed by working morale with 28 % from altogether fourteen available categories of expectations with regard to designer's attributes (including fair pricing, technical competence, flexibility, and others) (*Steiner et al., 2003; Steiner, 2006b*).

With respect to the set of competences industrial firms are incorporating from outside their own organizations, expectations vary depending on the peculiarities of the problem of interest: For example, within the relocation of a manufacturing plant external support by typical management consultants might be adequate, or in the case of acquiring expert knowledge because of an upcoming expansion of the corporation it might be fruitful to contact job hunters. Those external supporting experts have in common that they typically take into account supporting inner-organizational processes of the industrial firm, without being immediately involved within the process of innovation generation. Consequently, those kind of external partners usually do not contribute significantly creative ideas to the actual core product or service of the firm.

In contrast, the integration of external performances relevant for innovation usually requires other actors such as professional research institutions, universities, further industrial firms as partners within strategic alliances, or industrial design companies. As already pointed out industry has high expectations regarding the creative abilities of industrial design companies.

Being accepted as a crucial creative source either for product developments or the creation of innovation-friendly inner-organizational environments by the industry itself, it was a logical consequence to investigate industrial design companies in their role as creative sources for industry. The focus was on their understanding, objectives, and preferences on the establishment of innovation supporting physical work environments (their appraisal does not

necessarily equal their input within the industrial firms, but can also relate to the creation of physical work spaces within their own companies; in that way their own experiences might also become a precursor to later performances for their clients).

6.2 Supporting physical environments from an industrial design perspective

Regarding the kind of utilized design services 40 % of the industrial companies engage the service of product design, 15 % for promotion, 14 % for public relations, 9 % for web-design, 4 % for packaging design, 5 % for other diverse services, and – what is of special interest with regard to the physical environment – 13 % for interior design (see Figure 6).

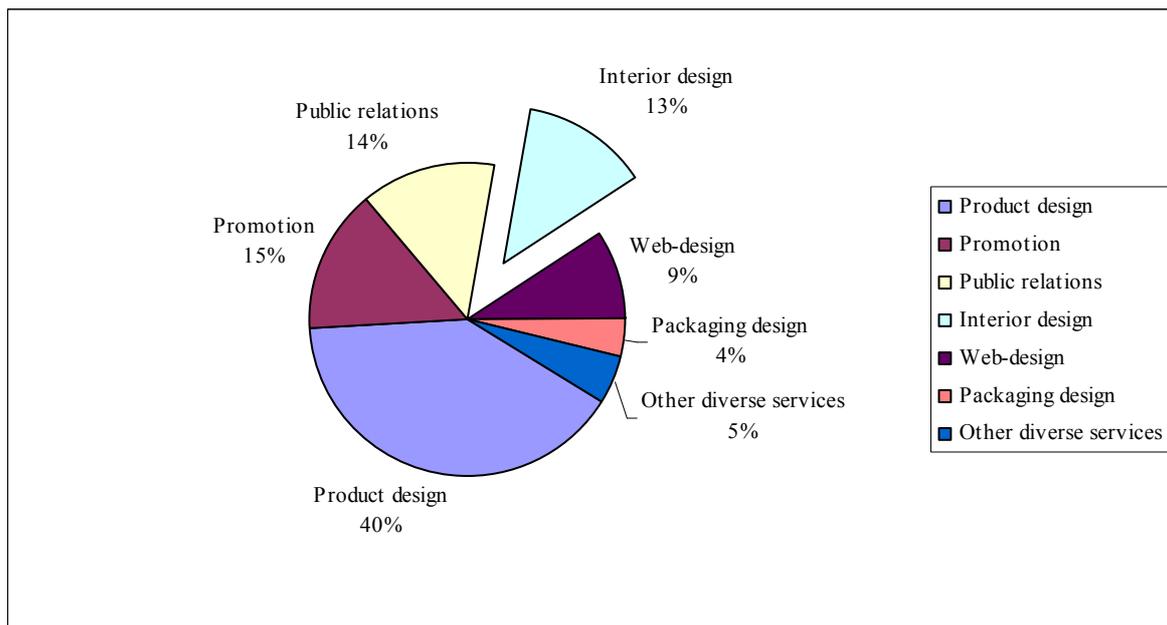


Figure 6: Utilized design services by industry

With regard to the physical work environment 55 industrial design companies in Austria and Germany were investigated regarding their preferences for basic office concepts such as individual office, open-plan office or combination office (of the two concepts) (see Figure 7). 66 % of the responding designers consider the individual office and 52 % consider the open-plan office as concepts which have little or no supportive function as regards creativity within the organization. Flexible office concepts on the other hand, such as the combination office with a basis cube farm but also individual office spaces that can be used to backtrack if needed, are considered to have a high impact on creativity by 48 % of the designers (this shows similar results to the investigations by Fraunhofer-Institut für Arbeitswirtschaft und Organisation IAO (*Spath and Kern 2003*)).

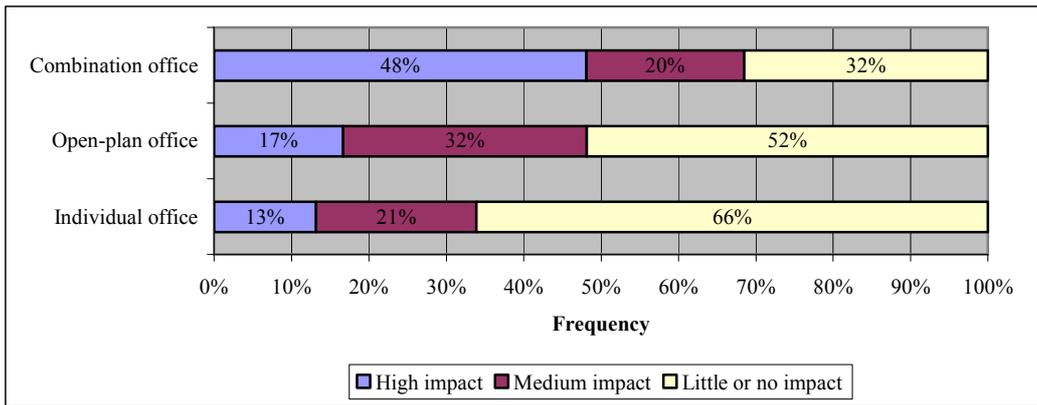


Figure 7: Office concepts as a facilitator of creativity

Special emphasis is also placed on informal communication such as at recovery areas equipped with coffee machines (72 %). Further stressed was also the importance of ergonomics (70 %) and the possibility to individually arrange the workplace (64 %).

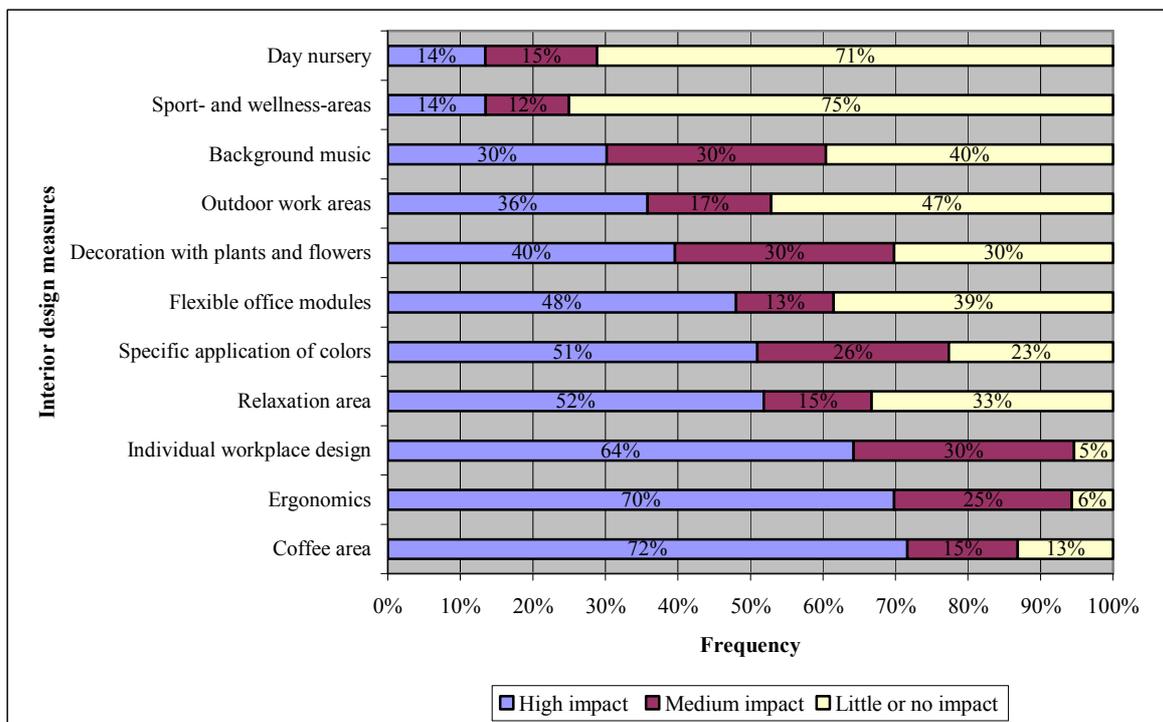


Figure 8: Impact of interior design measures on creativity

Recreational facilities for “power napping” seem to be of increased importance for the increased demand on creative output of individuals and teams (52 %). Sport facilities and wellness facilities, on the other hand, are not considered to have a positive impact on the occupational creative performance (see Figure 8).

7 Conclusion

It has been the objective of this paper to point out the complexity of organizational creativity as a prerequisite for innovative performance. Hence, not only collaborators and the problem-solving process are of importance, but also the different environments: the social environment, cultural environment and also the physical environment. It has further been stated that the physical environment has largely been neglected as having an influential impact on the creative capabilities of individuals and teams, but also reflecting the organization's culture. Future effort to find more appropriate forms of a physical environment, including the supra-environmental conditions, might have significant influence on the innovative performance of organizations. Therefore, practical implementation together with scientific efforts is needed on an interdisciplinary basis.

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¹ The model described in this article builds upon Harrington's general idea of a creative ecosystem which sets the conditions for the emergence of creative activity by taking into account the involved creative person(s), the creative project, and the creative environment (*Harrington 1999*).

² A famous example for a corporation with a strong physical appearance is the industrial design company IDEO in Silicon Valley (see Steiner 2006b).