ADAPTING PROJECT MANAGEMENT METHODOLOGIES FOR DIFFERENT CULTURES: TEAMS, TOOLBOXES AND HOFSTEDE

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Abstract: This paper looks at the unstudied link between cultural factors and necessary adaptations to typically standardized project management methodologies. In an empirical study resulting in 768 questionnaires for the US, Germany, and Japan, the well-established Hofstede dimensions were for the first time found to be correlated with the dimensions of the established methodology of the Project Management Institute (PMI). In addition, eight detailed elements of the PMI methodology were studied, with six areas displaying correlations to the Hofstede dimensions – the strongest for Project Human Resource Management (UAI r=0.394, MAS r=0.445, PDI r=0.441, IDV r=-0.358). Real-life projects however showed a lack of such considerations, making the derived recommendations for project managers as relevant as the suggested avenues for further research.

Keywords: Cultures, Globalisation, Hofstede Dimensions, HR Management, Project Management, Project Management Methodologies, Teams, Tools, Training, IT Projects, United States, Germany, Japan

SUMMARY

In today's interrelated world, complex interdisciplinary and international work structures are a fact of business life. Despite the rich literature covering methods for the management of projects (Geraldi & Söderlund, 2018), recommendations rarely consider cultural aspects that are typical for international projects. Some qualitative papers exist in related areas such as psychology and education (e.g. Fuad et al. (2020)), but not much beyond that explorative stage.

A study on how to adapt a standardized project management methodology to a multicultural environment meeting local standards and by cultural differences seems opportune, given the potential time and cost savings of such adaptations. Also, given several gaps in literature (e.g. Silva et al. (2021); Soroka-Potrzebna (2021)), it will add to knowledge.

Already a comparison of the different global approaches reveals that the Japanese perspective – compared to the dominant (and similar) perspectives in the United States and Europe – adds several cultural dimensions to the project management methodology, mostly in the area of (human) resource management and communications. This must be of interest to researchers and practitioners alike. Other comparisons would appear interesting as well.

The objective of this paper is to study the link between the cultural factors of a given project and the necessary project methodology adaptations. Project managers from different cultures should tend to manage projects differently, with the impact of their cultural background on the usage of project methodology elements. An empirical study has been devised that covers the entire triad and sheds light on the above questions. The well-established cultural dimensions introduced by Hofstede and Hofstede (2006) were found to be correlated with the dimensions of the most widely established project methodology.

The study employed multiple channels, such as direct emails and web links in related forums plus newsletters of key associations to reach the targeted sample group of experienced project managers in a global setting. After an active period of approximately two months, 768 questionnaires were considered valid and usable for analysis in SPSS. Among these questionnaires, Germans presented 364 respondents (47.4%), Japanese covered 179 participants (23.3%), and the USA provided 162 respondents (21.1%). Other nationalities with 63 participants (8.2%) were used only if they participated in clearly assigned projects.

The data show that in the respondent's view, cultural aspects within the project work are not being considered in project management methods – only 176 respondents or ca 30% had a positive answer. For German project managers, the difference between the positive participants and those who stated 'no' is at a ratio of 1:2, whereas for Japanese and US-Americans, the difference between the participants who stated cultural factors were considered and the ones who stated 'no' was at a ratio of even 1:3 – an even stronger divide. There were also clear correlations between the Hofstede dimensions of national culture.

Similar culture-driven findings can be reported for the process groups and knowledge areas of the project management institute methodology, especially when analyzing the Hofstede dimensions. Out of the eight dimensions of the most established project methodology,

only two dimensions show either no correlation (project management integration) or a rather low one (project scope management). All other six areas of the methodology display specific correlations to the Hofstede dimensions, with Project Human Resource Management showing the strongest correlations (UAI r=0.394, MAS r=0.445, PDI r=0.441, IDV r=-0.358). Recommendations for project managers for specific project groups are derived and presented.

Even in light of the limitations of this study for triad markets, it can be concluded that an adaptation of project management methodologies to the relevant cultures is indicated. Further research in this direction will help improve efforts to avoid cultural mismatches, thereby improving both the results and the motivation of project managers. Even if project methodologies do not guarantee project success (Kerzner, 2019), an enhancement in both the framework itself and the related training and subsequent practices can be the much-needed outcome of continued research in this field.

1. INTRODUCTION

In an increasingly interrelated world, complex interdisciplinary and international work structures remain relevant. Some authors even speak about a "projectification" (Zhang et al., 2015), with specialists organizing themselves in projects rather than along permanent functional structures. Large-scale global or international project structures are therefore a major trend, bringing together teams that consist of participants from different countries and with different cultural backgrounds (Hoffmann et al., 2004). Alternatively, teams work in different environments than they are used to, rolling out proven concepts on a broader scale.

In either case, communication issues as well as different ways of thinking, conceptions of quality, time, and a variety of standards that exist in different countries may come up, requiring specific cooperation and management (Kerzner, 2004; Soroka-Potrzebna, 2021). This increase in complexity impacts project management tasks (Eberlein, 2008).

Despite the rich literature covering methods for the management of projects (Garel, 2013), recommendations rarely consider cultural aspects that are typical for international projects. They are mostly of a general nature, with the rare exemption of Piwowar-Sulej (2021), who studies the sub-topic of organizational culture and its influence on project management methodology for the financial industry. Here, it is concluded that for their project methodology choices, project managers consider organizational culture as even more important than any factual project characteristics. This gives a pointer on the importance of such elements.

At the same time, the practice seems to face severe problems. For example, "statistics show that over half of international projects either fail, fail to be completed, or do not deliver the results that were promised" (Lientz & Rea, 2003). A study on how to adapt a standardized project management methodology to a multi-cultural environment meeting local standards and by cultural differences seems opportune, given the potential time and cost savings (Peter, 2002) of such adaptations.

The objective of this paper is to study the link between the cultural factors of a given project and the necessary project methodology adaptations. Project managers from different cultures should tend to manage projects differently, with the impact of their cultural background on the usage of project methodology elements (Mach & Baruch, 2015). This research is located in the well-established stream of meso studies on project management, covering its potentially most relevant field, as outlined by Geraldi and Söderlund (2018). An empirical study has been devised that covers real-life project managers of different multinational backgrounds, shedding light on the above questions. The well-established cultural dimensions introduced by Hofstede and Hofstede (2006) will be used, and project methodologies originating from three culturally diverse locations are also considered, covering the triad markets. It can also contribute to a field that lacks a solid theory of its own (Abyad, 2019).

2. LITERATURE RESEARCH

The literature review concentrates on larger projects and related methodologies and the impact of a country's culture on such projects. Given a large body of literature on culture, the authors focus mostly on project management topics, leaving a review of culture research to the necessary minimum. The chapter provides an overview of the field and outlines the findings from an international perspective, wherever possible.

2.1 Definition and Fields of Culture

Derived from the Latin word "cultura," which means "growing" or "cultivation" (Haecker et al., 2003), the term "culture" can refer to very different meanings, depending on which area of our reality it is related to. Nevertheless, several elements are consistently referred to in the literature.

- Universality – Culture and its defining elements are shared by members of society (McCarty, 1989).
- Time - Culture is transferred from generation to generation (Hofstede, 1997).
- Symbols: Culture is reflected in both tangible and intangible symbols (Geertz, 2003).
- Orientation: The main function of culture is to give orientation to its members (Hofstede, 2001).
- Change: Members of culture are both part of it and also form culture (Inglehart & Maeurer, 1989).

In that sense, culture is not bound to national borders, as mentioned by Trompenaars and Hampden-Turner (1997), but it can develop with a group of people sharing the same values and ethical views. This leads to the differentiation between national culture and corporate culture, and it can be further interpreted as different levels of culture also found inside a sufficiently large company.

Such organizational cultures exert a clear influence on projects (Project Management Institute, 2004). One example is a specific project culture, here defined as an accumulation of conventions, values, and related rules of a project (Gareis, 2004). In this environment, projects can develop their own unique culture, while still evolving together with the overall organizational culture.

2.2 Definition of Projects

One of the distinguishing elements of a project is the fact that they are always seen as different from ongoing operational work. Specific criteria are chosen to determine such as distinguishing character, with a vast literature listing criteria such as:

- Clear objective and temporal limitations: The results to be achieved are clearly specified (Meier, 1998), and assignments or customer requirement specifications provide purpose. At the same time, there is a clearly defined start (project kick-off) and end (closing) of the project, which can also be an interruption due to (expected or real) non-accomplishment of the project objective (Salzgeber, 2001).
- Novelty - As projects are not part of routine work, their novel character brings a certain risk, including the uncertainty of whether the project objectives can be achieved. Thus, the probability of failure is higher for project tasks than for operational activities (Kraus & Westermann, 1998).
- Range Overlap and Complexity: Given the interdisciplinary character of projects, several areas need to be covered (Fuchs, 1999). In addition, the complexity is high due to the novel character of the task, the number of project participants, and the related risks (Birker, 1999).
- Limited resources - Both for qualified personnel and for available other means in a company–naturally, there is competition between resources for project versus operational line tasks (Kraus & Westermann, 1998).

In a relatively concise form, the German Institute for Standardization's DIN 69901 Standard defines a project as an "enterprise that is characterized by unique conditions such as a particular target setting, restricted resources, separation from other ventures and specific organization" (Koreimann, 2002).

Consequently, international projects include people from different cultural areas (Kiesel, 2004) involving multiple locations, organizations, entities, and business units (Lientz & Rea, 2003). As shown in previous studies, for example, by Mach and Baruch (2015), it can be assumed that a cross-cultural team composition can have clear consequences on performance, thus presenting an important area for research, as studies with managerial implications are still rare (Zhang et al., 2015).

Several studies have been conducted in this field, including de Carvalho et al. (2015), who studied 1387 projects in the three countries of Argentina, Brazil, and Chile and found interesting cross-country (and cross-sector) effects. However, a triad wide study has not yet been performed.

2.3 Project Management Methodologies

To achieve the project objectives mentioned above, the specific management of a project is adequate. The Project Management Institute comes up with the following definition: "project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Project management is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing" (Project Management Institute, 2004).

Extant literature demonstrates that such a specific type of project management not only generates higher success probabilities for projects (Schelle, 1996), but also avoids complete reorganizations from reacting to the changed environmental conditions of a given entity, as it allows to be specific in terms of leadership, time, resources, and result (Stevens, 2002). At the same time, the number of potential methodologies for project managers in the market is large and partially adapted to life cycles, market sectors, products, and technologies (Charvat, 2003).

The complexity of projects has a major influence as well (Baptista et al., 2016).

However, generally accepted and standardized guidelines play a major role in the training of project managers and their work in local as well as international projects, mostly being launched by professional organizations (Project Management Institute, 2004). They play an important role in providing a common ground. Also, they do fit into an emerging field "in prior literature, it is generally seen that there is no explicit theory of project management, … it is possible to find statements from the PMBOK Guide or the work of leading scholars on project management that approximate the definition of a theory or from which a theory can be deduced" (Abyad, 2019). We follow this pragmatic approach to set the stage for the study at hand.

Founded in 1969 to document and discuss project management practices from very different areas, such as construction or pharmaceuticals, the Project Management Institute of the United States is the major organization of this kind. Its "Guide to the Project Management Body of Knowledge" started in 1987 and is now the most widespread project management standard, recognized by the American National Standards Institute (ANSI) and cooperating with the International Organization for Standardization (ISO) as well. It commands a lead role in the field (Charvat, 2003), in line with its intention to be seen as the "sum of knowledge within the profession of project management' (Project Management Institute, 2004).

This guide covers a framework based on a project lifecycle definition, five project management process groups, and nine knowledge areas. Updates are done by volunteers, reflecting real practice in all these fields (Project Management Institute, 2004):

- Project Framework - A project lifecycle is defined, and cultural, social, political, international, and economic aspects affecting the project environment are introduced.
- Process Groups - Based on the overall 44 processes described in the guide, five process groups are defined as related clusters, namely, initiating, planning, executing, monitoring, and closing.
- Knowledge Areas – Interrelated with these processes and process groups, knowledge areas cover all relevant aspects of a project. In principle, the areas are self-explanatory, as they cover project integration management, scope management, time management, cost management, quality management, human resource management, communications management,

risk management, and procurement management.

In other areas of the world, the most relevant is the guidebook of project and program management for enterprise innovation launched by the Project Management Association of Japan (2003) in Japanese. This approach was first released at the International Project Management Congress in Tokyo in 2001, specifically targeting reforms in the Japanese economy and its organizations.

The approach is split in P2M and is split into three main parts: the project management part, a chapter on platform management, and the knowledge package with domain management similar to the knowledge areas discussed above (Project Management Association of Japan, 2003):

- Project Management - A project scope is defined not just for the project, but also its impact on the overall company.
- Platform Management - Provision of a capacity-building baseline is at the center of this chapter, also encompassing program management for multiple projects (Hill, 2008).
- Domains: Necessary knowledge and skills are described in 11 domains, encompassing project strategy management, finance management, systems management, organization management, objectives management, risk management, information technology management, relationship management, value management , and communications management.

A comparison of the latter (Japanese) approach with the dominant perspective in the United States and Europe reveals that the Japanese perspective adds some cultural dimensions to the project management methodology, although mostly in the area of (human) resource management and communications. This must be of interest to researchers and practitioners alike.

This brings up the major research question of this study, namely, the relationship between cultures and project methodologies. Given the dominance of the methodology by the Project Management Institute, the authors will undertake to delve into this question based on their methodology. Before that, the literature analysis will be completed by introducing cultural factors in general terms and projects.

2.4 Country Differences
Selecting the USA, Germany, and Japan as study fields, the authors pay tribute to the concept of triad markets, but also to their own experience in these cultural areas. In a major

stream of such research, Hofstede (2001) compared the dimensions of national culture, revealing clear differences between the three continents and cultures selected.

Against such a background, in specific projects with participants of different cultural backgrounds or within different cultural settings, project success is often related to the prerequisite of cross-cultural competence (Fritz & Möllenberg, 2003). Many subdimensions have been suggested in the literature, including competence regarding language, communication, ambiguity tolerance, intercultural sensitivity, social network building, cultural identity management, knowledge of cultural standards, impartiality, and intercultural interaction capabilities.

The literature is very clear about the fact that this competence field is highly situational, and thus very specific for different cases (Bollmann et al., 1998). The links to project success factors have been studied, partially using Hofstede's dimensions (Chipulu et al., 2014), and evidence has shown that cultural backgrounds influence the planning stage of projects (Rees-Caldwell & Pinnington, 2013). Similar evidence points to differences in the evaluation and monitoring phases (De Bony, 2010). At the same time, it is not obvious how a generic approach such as the major American approach can be successful in a German or even Japanese environment, leaving only the opposite direction. This topic will be studied in greater detail.

3. STUDY AND METHODS
To tackle both the gap in the literature with regard to multicultural project management methodologies, and the resulting need for strategically relevant action with regard to the relevant project management methodologies, a study was performed in the selected three countries.

3.1 Research Questions
The major research questions were whether (1) project managers believe that cultural topics are sufficiently considered in project management methodologies, whether (2) different cultures, as expressed in the Hofstede dimensions of national culture, show correlations with the different handling of the process groups defined above and whether (3) these dimensions of national culture show correlations with the knowledge areas shown above.

The literature analysis leads to the following three hypotheses:

H1a: Project managers believe that cultural topics are considered sufficiently in project management methodologies.

H1b: For actual projects, project managers see cultural factors considered accordingly.

H2: Different cultures, as expressed in the Hofstede dimensions of national culture, show correlations with the different handling of the process groups, measured in terms of time used for these groups.

H3: The Hofstede dimensions of national culture also show correlations in terms of focus on certain knowledge areas.

In particular, H2 and H3 will be examined for the three regional areas studied, that is, the US, Germany, and Japan.

3.2 Research Study Design / Methods
Based on an internet survey, individuals with more than one year of experience in national and international project management were sampled from the target countries. The survey used a 6 point Likert scale and closed questions to collect the data, using English and Japanese as the relevant language. Questionnaires were translated and back-translated to ensure quality and were pre-tested, and participants were chosen at random.

Experts in the field of project management and intercultural management were contacted for the survey, using direct e-mail. This approach resulted in 650 respondents. In addition, a web-based questionnaire was provided in different Internet forums related to project management. Finally, several associations published a link in their monthly newsletters, thus potentially reaching more than 156,500 persons (calculating the member counts and direct e-mails). The authors contend that this high number of potential respondents should have had a positive influence on the probability of qualified responses.

4. RESULTS
After an active period of approximately two months, a total of 1.036 completed questionnaires were submitted. Based on the sampling criteria explained above, 768 out of 1.036 were considered valid and usable for analysis in SPSS. Among these questionnaires, Germans presented 364 respondents (47.4%), Japanese covered 179 participants (23.3%), and the USA provided 162 respondents (21.1%). Other nationalities with 63 participants (8.2%) were used only if they participated in clearly assigned projects.

4.1 Project Method Experiences
Regarding the study item (1), the answers of the 768 respondents show that for three quarters, cultural factors are considered in current project management

methodologies. This can be seen in Table 1:

TABLE 1: CONSIDERATION OF CULTURAL FACTORS

Methodical Cultural Factors Consideration								
Included		Excluded		Total		Mean	Std. Deviation	Vari-ance
#	Percent	#	Percent	#	Percent			
581	75.70%	187	24.30%	768	100.00%	1.7	0.46	0.212

This finding in Table 1 is at first encouraging, as it shows high awareness of project managers. However, when asked about their previous experience in terms of consideration of cultural factors in real projects, 405 (59.71%) of the participants answered' no, and 176 (30.29%) answered 'yes'.
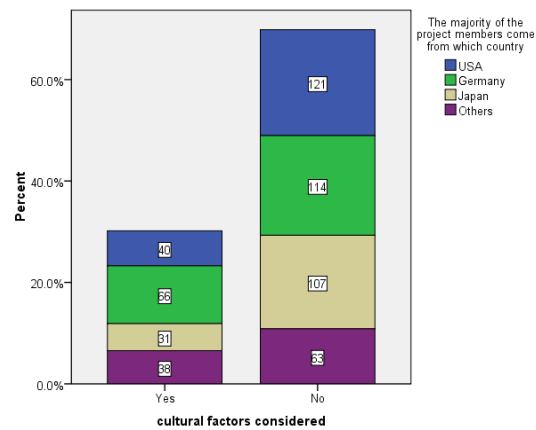

FIGURE 1: CONSIDERATION OF CULTURAL FACTORS BY NATIONALITY

A closer look at the allocation by nationality of the respondents is shown in Figure 1. The allocation for the German project managers shows that the difference between the participants who stated cultural factors was considered and those who stated 'no" was at a ratio of 1:2. When looking at the answers of the Japanese and US Americans, the difference between the participants who stated cultural factors was considered and those who stated 'no" was at a ratio of even 1:3 – an even stronger divide.

Overall, the data show that H1a can be supported; that is, project managers see cultural differences well reflected in the existing project methodologies.

This finding prominently clashes with that for H1b, which is not supported, indicating that real projects are to a majority not considering these cultural factors.

There seems to be a clear implementation gap, and a larger one in the US and Japan at that time.

Another central finding of this survey is the significant difference between the duration of the process groups among the subject nations. For reasons of space, these details are not presented, but rather the major findings:

The duration of the process groups "Initiating," "Planning" and "Executing" has moderate correlations to Hofstede's Dimensions of National Culture. The data set reveals the highest correlations for the initiating process group (between 0.567 and 0.666), showing that Japan's high Uncertainty Avoidance (UAI), Masculinity (MAS), Power Distance (PDI), and Long-term Orientation (LTO) scores go together with a long project-initiating phase, as well as a low Individualism (IVD) score. This is (at a lower correlation level) the case for the planning process group (between 0.378 and 0.431).

Overall, H2 is therefore partially supported.

4.2 Nationality and Knowledge Areas
4.2.1 Project Management Integration
Our data, as exemplarily presented in Figure 2, show that the five areas of the Project Management Integration process were more often obtained in Germany (mean 10.30) and in the USA (10.62) than in the Japanese (12.33), which means that they paid less attention to this process.

The biggest differences e.g. can be pointed out at the area 'develop project management plan'. On average, the Japanese (2.60) obtained this area less often, whereas the US-Americans (1.90) and Germans (1.99) obtained it frequently.
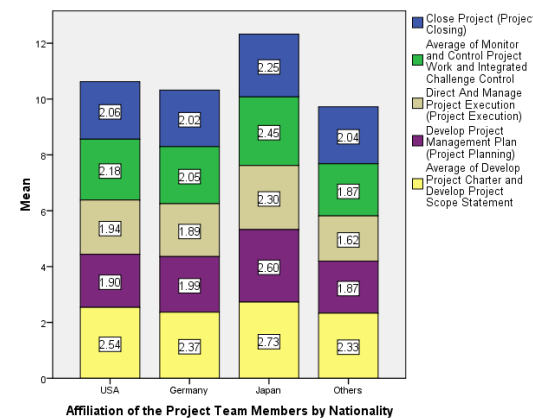

FIGURE 2: PROJECT MANAGEMENT INTEGRATION

For the following dimensions, we skip the presentation of detailed result tables and refer to the final overview at the end of this chapter.

4.2.2 Project Scope Management
Our data also show that the two areas of the project scope management processes were more achieved in Germany

(4.03) than in the USA (4.43) and Japan (5.24). In addition, the responses show that the Japanese do not prioritize these processes as high as other nationalities.

4.2.3 Project Time Management
As for the two areas of the project time management process, these were more often adopted in Germany (3.64) in contrast to the USA (4.44) and Japan (5.18).

4.2.4 Project Cost Management
Strong results for two areas of the project cost management process were most often achieved by the German respondents (4.10), closely followed by the US-Americans (4.33), whereas the Japanese (5.07) focused less on this process.

4.2.5 Project Quality Management
According to the data collected, the Japanese respondents (5.56) focused most on the three areas of project quality management, while the Germans (6.94) and US-US-Americans (7.01) put emphasis on these three areas less frequently.

4.2.6 Project Human Resource Management
Our data also show that the three areas of the project human resource management process were more often achieved in the USA (6.50) and Germany (6.54) than in Japan (8.46). In addition, Japanese respondents are not focused too much on any of the areas in this process, in comparison to the US-Americans and Germans.

4.2.7 Project Communications Management
The three areas of the project communications management process were more often obtained in the USA (6.02) and Germany (6.11) than in Japan (7.59). Interestingly enough, there is not such a strong difference in terms of stakeholder management as the review of case study research by Lückmann and Färber (2016). The biggest differences e.g. can be pointed out at the area 'information distribution'. On average, the Japanese (2.48) obtained this area less often than the US-Americans (1.83) and Germans (1.73).

4.2.8 Project Risk Management
Then, it can be reported that the Japanese respondents (4.12) focused on the two areas of project risk management, while Germans (4.98) and US-Americans (5.55) obtained them less often. This is consistent with the results of Liu et al. (2015), who reported that national cultures affect project risk management in light of Hofstede's dimensions.

4.2.9 Project Procurement Management
The data further show that the four areas of the project procurement management processes were more often applied by US American respondents (9.33), followed by the Germans (9.90), whereas the Japanese (10.47) focused less on this process. The biggest differences, for example, can be pointed out at the average of the area "request seller's responses and select sellers" On average, the Japanese (3.13) obtained this area less often, whereas the US-US-Americans (2.4) and Germans (2.48) obtained it more frequently.

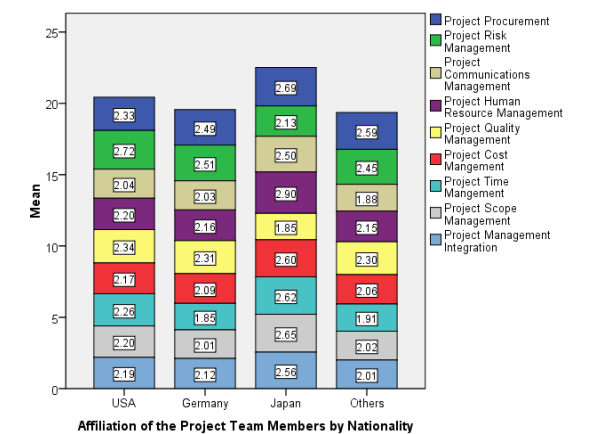**4.2.10 Summary of Project Management Knowledge Areas Processes**

FIGURE 3: SUMMARY OF THE KNOWLEDGE AREAS PROCESSES

The overview in Figure 3 presents the summary results of the processes of the nine project management knowledge areas. In summary, the Japanese respondents (mean 22.50) focused less on Knowledge Areas compared to those from the USA (20.45) and Germany (19.57), whereas Germany spent more time on obtaining knowledge area processes.

At the same time, it has to be mentioned that the Japanese concentrated more on project quality management and project risk management processes than Germany and the USA.

4.3 Nationality and Process Groups
After the project management knowledge areas, in this chapter, the project management process groups are to be considered. For this part, we chose to present detailed results for those groups where there are interesting findings for some of the sub-areas, as well as a summary.

4.3.1 Initiating Process Group
The data show that the initiating process group was more

often achieved by the German respondents (mean 2.38), closely followed by the US-Americans (2.54), whereas the Japanese (2.77) focused less on this process.
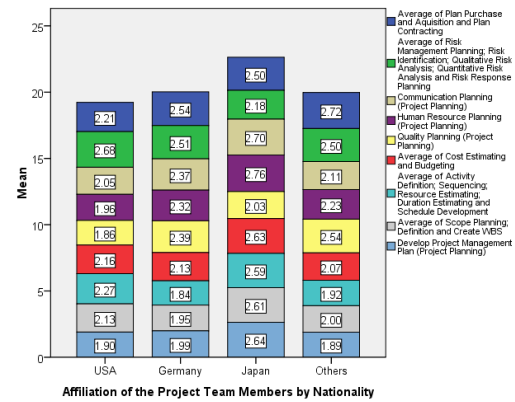
4.3.2 Planning Process Group

FIGURE 4: PLANNING PROCESS GROUP

The data in Figure 4 illustrate that the five areas of the planning process group were more often obtained in the USA (19.22) and Germany (20.04) than in Japan (22.64).

One of the major differences is the development of a project management plan". On average, the Japanese (2.64) obtained this area less often, whereas the US-Americans (1.90) and Germans (1.99) obtained it more frequently. (The two authors, having worked in Japan for several years, can relate well to these findings that may seem unexpected for outsiders.)

On the other hand, in terms of risk management (green box in the chart), the Japanese (2.16) executed this area more frequently, whereas the Germans (2.51) and US-Americans (2.68) obtained it less often.
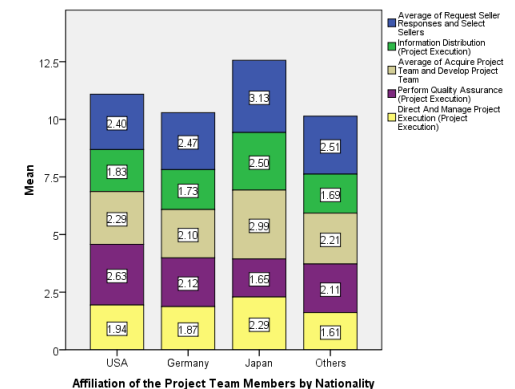
4.3.3 Executing Process Group

FIGURE 5: EXECUTING PROCESS GROUP

Figure 5 presents the five areas of the execution process group. The German respondents (10.29) achieved this

process group more often, followed by the US Americans (11.09), whereas the Japanese (12.56) focused less on this process. The Japanese (1.65) focused on four areas less often than the Germans (2.12) and the US-Americans (2.63), except in terms of "perform quality assurance" Furthermore, US Americans perform quality assurance less often.

4.3.4 Monitoring Process Group

It can be found that the Japanese respondents (21.92), closely followed by the US-Americans (21.12), focused less on the monitoring process group, while the Germans (19.20) obtained it more often. It can be pointed out that the Japanese (1.95; 1.87) focused more on the areas "risk monitoring and control" and "perform quality control" than the Germans (2.45; 2.44) and the US-Americans (2.87; 2.52). In all other areas, they paid less attention compared to Germans and US-Americans.
Similar differences were found by De Bony (2010) when comparing Dutch and French project managers.

4.3.5 Closing Process Group

As a specific case, the two areas of the closing process group were achieved in a similar way by Japan (4.45), Germany (4.43), and the USA (4.26). This is partly surprising given the differences in other areas.

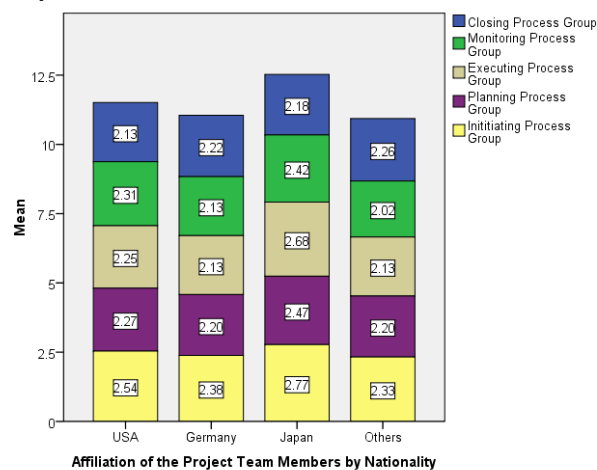### 4.3.6 Summary of the Process Management Process Groups

FIGURE 6: SUMMARY OF THE PROJECT MANAGEMENT PROCESS GROUPS

Figure 6 presents the summary results of the five project management process groups. It can be seen that overall, the Japanese respondents (12.52) focused less often on the five areas as compared to USA (11.50) and Germany (11.06). In addition, the data reveal that German

respondents spent more time on average to obtain complete process groups than the other nationalities.

4.4 Hofstede and Project Methodology

While we had seen that project managers' views reveal specific correlations with the perceived suitability of current project management methods, along with the well-established Hofstede dimensions, we will now deeply dive into specific areas. In the following paragraphs, the differences among Japan, Germany, and the USA are applied to the relevant issues of each project process group and project target.

Japan, Germany, and the USA were compared directly (a) concerning the implementation of particular knowledge areas and (b) regarding the specific rating of project targets. Furthermore, a correlation analysis among the dimensions of national culture by Hofstede and the project targets, respectively, knowledge areas were taken into account.

As a first step, the Knowledge Areas have been matched to related project targets, as e.g. "Keep Scope" is related to "Project Scope Management." Additionally, the Pearson correlation among the dimensions of national culture by Hofstede and the project targets was determined. Unless otherwise mentioned, all correlations in the following table represent Pearson r correlations, as Hofstede's scores were considered to be an interval level variable. Only correlations at a moderate level (i.e., r >0.25) were considered relevant for this analysis. Also all of the mentioned correlations are significant at α = 0.01 level (2-tailed).

As a second step, the actual implementation of knowledge areas was analyzed. As a measure, a percentage is given, based on the average implementation of the processes of the specific knowledge area within the project teams compared to the maximum implementation. "Always obtained" as an answer for the implementation of the Knowledge Area processes counts as 100% and "Not relevant" counts as 0%. This measure is characterized as the relative implementation frequency.

The third step included a correlation analysis of Hofstede's dimensions of national culture and each knowledge area. Here, the scores for each dimension were correlated with a single Knowledge Area. Again, only moderate correlations (i.e., r >0.25) were included in the analysis. Finally, a conclusion was derived from the analysis of every knowledge area.
The results are presented in the form of a structured overview:

1. Project Management Integration			
Interrelation to corresponding project targets	No direct connection to enquired project targets.		
Implementation of Knowledge Area Processes	Germany	Japan	USA
	72%	61%	67%
Correlations to Hofstede's dimensions of National Culture	No specific findings.		

2. Project Scope Management			
Interrelation to corresponding project targets	• There are very low correlations among the project target "Keep Scope" and the dimensions established by Hofstede.		
Implementation of Knowledge Area Processes	Germany	Japan	USA
	75%	59%	70%
Correlations to Hofstede's dimensions of National Culture	• MAS (0.276), PDI (0.304), LTO (0.286) • A higher level of MAS, PDI or LTO comes with a less implementation of Project Scope Management		

3. Project Time Management			
Interrelation to corresponding project targets	• "Keep Time" less important for Japanese teams than for German or US-American teams. • "Keep Time" has negative moderate correlations to UAI (-0.415), MAS (-0.430), PDI (-0.387), LTO (-0.426) and a positive moderate correlation to IDV (0.393), • The lower the UAI, MAS, PDI, LTO score, the higher the importance of "Keep Time". • A low IDV score shows a low importance of "Keep Time". • "Keep Time" has no significant correlation to "Ensure Quality" which proves that the conclusion that Japanese project teams compromise on scheduling in favour of quality enhancement is wrong.		
Implementation of Knowledge Area Processes	Germany	Japan	USA
	79%	60%	69%
Correlations to Hofstede's dimensions of National Culture	• PDI (0.337), MAS (0.270), LTO (0.288) • A higher PDI/MAS/LTO score goes along with less implementation of Project Time Management		

4. Project Cost Management			
Interrelation to corresponding project targets	• Very low importance for Japanese teams. • "Keep Cost" has negative moderate correlations to UAI (-0.261), MAS (-0.312), PDI (-0.326), LTO (-0.319). • A low score of UAI, MAS, PDI or LTO is parallel to a high importance of "Keep Cost".		
Implementation of Knowledge Area Processes	Germany	Japan	USA
	73%	60%	71%
Correlations to Hofstede's dimensions of National Culture	No specific findings		

5. Project Quality Management			
Interrelation to corresponding project targets	• The target "Ensure Quality" is of lower importance within US-American and German teams. • The correlations between Hofstede's Dimensions and "Ensure Quality" are on a medium level (between 0.354 and 0.397). Thus, a higher score for UAI, MAS, PDI and LTO means a better implementation of Project Quality Management. Only IDV has a negative correlation and therefore a higher IDV score causes that Project Quality Management is less obtained		
Implementation of Knowledge Area Processes	Germany	Japan	USA
	67%	79%	67%
Correlations to Hofstede's dimensions of National Culture	• Negative medium level correlations for four dimensions: UAI (-0.298), MAS (-0.324), PDI (-0.308), LTO (-0.325) and a positive medium level correlation for the dimension IDV (0.276). • The lower the score for UAI, MAS, PDI, LTO the less is the Project Quality Management process implemented. • High IDV score indicates low implementation of Project Quality Management.		

6. Project Human Resource Management			
Interrelation to corresponding project targets	No direct connection to enquired project targets.		
Implementation of Knowledge Area Processes	Germany	Japan	USA
	71%	53%	70%
Correlations to Hofstede's dimensions of National Culture	• Highest correlation scores out of all the Knowledge Areas: there exists a positive moderate correlation for the UAI (0.394), MAS (0.445), PDI (0.441), LTO (0.450) and a negative moderate correlation for the IDV (-0.358). • High UAI, MAS, PDI, LTO scores mean low implementation of Project Human Resource Management. • High IDV score indicates high implementation of Project Human Resource Management.		

7. Project Communications Management			
Interrelation to corresponding project targets	No direct connection to enquired project targets.		
Implementation of Knowledge Area Processes	Germany	Japan	USA
	74%	63%	74%
Correlations to Hofstede's dimensions of National Culture	• Positive moderate correlations to four Hofstede dimensions: UAI (0.287), MAS (0.320), PDI (0.312), LTO (0.322) and a negative moderate correlation for the IDV (-0.263). • A decreasing UAI, MAS, PDI, LTO score leads to less implementation of Project Communications Management. • A low IDV score means a higher implementation of Project Communications Management.		

8. Project Risk Management			
Interrelation to corresponding project targets	• "Minimize Risk" reveals a positive moderate correlations with UAI (0.254) and a negative moderate correlation with IDV (-0.272). • An increasing UAI score leads to better achievement of the project target "Minimize Risk". The higher the IDV score, the more risks are accepted.		
Implementation of Knowledge Area Processes	Germany	Japan	USA
	62%	72%	57%
Correlations to Hofstede's dimensions of National Culture	• Similar to "Minimize Risk", Project Risk Management has negative moderate correlations with UAI (-0.302), MAS (-0.292) and LTO (-0.284) and a positive moderate correlation with IDV (0.296). • Teams with higher scores for UAI, MAS and LTO apply the Project Risk Management processes stronger. • A collectivistic world view implies a tendency of risk avoidance.		

9. Project Procurement Management			
Interrelation to corresponding project targets	No direct connection to enquired project targets.		
Implementation of Knowledge Area Processes	Germany	Japan	USA
	63%	58%	67%
Correlations to Hofstede's dimensions of National Culture	No specific findings.		

With these findings, H3 can be partially supported, with six out of nine knowledge areas showing at least some correlations to Hofstede dimensions.

5. DISCUSSION

Beyond the pure research findings, some conclusions for practice are suggested as well. The above results can be used to derive actions in much detail, for example, by generating scorecards to provide a project manager with information on which processes should be managed in more detail in German, US, and Japanese teams in order to meet budget and time conditions. The authors used such cards to communicate their results in an application-oriented form.

As a final summary, for Japanese teams, it can be stated that PM methodology must be implemented in more detail. Only project quality management is sufficiently obtained. This could explain why Japanese teams faced time overruns greater than 50% in 70% and budget overruns greater than 50% in 78% of all cases.

In American teams, project risk management and project quality management are critical. Planning and controlling risks would likely have a positive impact on project success. However, no knowledge area is sufficiently implemented.

A project manager of German teams should especially work on project risk management and procurement management, as those knowledge areas are less obtained. Project time management is implemented sufficiently, so the project manager should focus on the other processes that need to be obtained more often.

In any case, such directional advice can only describe tendencies. However, it shows that there are specifics to consider.

In addition, it may logically be argued from our findings that mixed teams should indeed provide superior results than monocultural ones. However, this hypothesis has not been considered during the definition of the research design and should, therefore, be checked by further research.

6. LIMITATIONS AND FURTHER RESEARCH

As for every study, the related design decisions have limitations. At the same time, this allows for the identification of further areas of research on the topic. The next paragraphs outline some of the major limitations and future research avenues.

Since the collected data were limited to three countries (Germany, Japan, and the USA), the applicability of the results for other countries cannot be taken for granted. Therefore, future international research should consider other countries and focus on collecting data from a larger population. Furthermore, the analysis of the data and the explanation of the findings are based on Hofstede's dimensions of national culture and the chosen project management methodology. Other cultural theories and methodologies should be studied to support these findings.

Culture homogeneity, as assumed in this study, does not necessarily hold up. Rather, we have studied "national culture", that is, a homogeneous culture within a country that ends with its political border. This also relates to the reference made to Hofstede's research (Baskerville, 2003). A fourth limitation lies in the fact that 38% of the respondents worked in the automotive/IT sector. A different setting can address these two concerns.

Given the differences in self-evaluation among cultures (Zwikael et al., 2005), the data collection itself also has limitations. Only another research method could address this concern.

Specific limitations also apply to the samples, both in scope and size. The precondition of a one-year project management experience has an influence on the results, as potentially the stronger representation of one nationality versus the other in the sample might have. Similarly, different sectors may require specific project management adaptations (de Carvalho et al., 2015). Finally, the project management institute methodology is one that will evolve over time, as this method is regularly adapted by volunteers in order to reflect management reality over time.

In conclusion, it must be stated that an adaptation of project management methodologies to the relevant cultures is indicated by this study, especially in practical applications that seem to lag behind the knowledge itself. Further research in this direction will help improve further fine-tuning to avoid cultural mismatches along different dimensions of culture rather than just regional ones (see e.g., Piwowar-Sulej (2021)), thereby improving both results and the motivation of the project managers themselves (Arenius, 2005).

As in the saying about when all you have is a hammer, refining the use of existing tools can open new perspectives. Even if project methodologies do not guarantee project success (Kerzner, 2019), an improvement in both the framework itself and the related training and subsequent practices can be the much-needed outcome of continued research in this field.

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ADAPTING PROJECT MANAGEMENT METHODOLOGIES FOR DIFFERENT CULTURES: TEAMS, TOOLBOXES AND HOFSTEDE