ISO 21500: The Benefits of Processes; Risk, Cost, Time and Project Management

Lára Kristín Kristinsdóttir

The School of Business and Department of Environmental and
Natural Resources at the University of Iceland

Eðvald Möller

The School of Business at the University of Iceland

Abstract: *The objective of this research article is to examine the potential benefits of applying the ISO 21500 standard in a consultancy firm in Iceland. Qualitative research was conducted to explore how the employees of a certain company viewed processes such as risk, cost, time, and project management. This was done by researching how the prevailing situation is before the application of ISO 21500 and to establish whether there would be any benefits from incorporating the standard. The results show that the standard can benefit companies even if they have several other ISO certifications. The benefits include greater synchronization of processes in projects, increased solidarity with clearer boundaries and known expectations, and finally, a potential increase in quality.*

Keywords: *Project management, structure, quality, ISO 21500, processes, success criteria, benefits of project management standard, standard for a consultancy firm*

1. INTRODUCTION

Project management is becoming increasingly salient in organizations as an increasing number become more project-orientated with each passing year. According to Stellingwerf and Zandhuis (2013), 'One-fifth of the world's GDP, or more than \$12 trillion, will be spent on projects each year in the decade 2010–2020' (p. 35). People involved in these projects are working with complex processes and with concepts that are often hard to understand. With the increased demand and pressure resulting from such projects, the International Organization for Standardization (ISO) decided to publish a project management standard, ISO 21500, to make these processes and concepts more comprehensible and accessible, enabling companies to cooperate with greater efficiency.

It is important when discussing project management to understand what projects consist of today. Most project management literature (Morris, 2013; Morris & Hough, 1988; Packendorff, 1995; PMI Standards Committee, 1987) defines a project as a unique once-in-a-lifetime task, with a set date of delivery, subjected to one or several performance goals, and consisting of a number of complex and/or interdependent activities. Project management is then concerned with controlling all of these aspects. Managing projects requires that those involved master aspects of various combinations of disciplines such as leadership, time management, communication, documentation, managing stakeholders and so forth.

In recent years, associations such as the Project Management Institution (PMI) and the International Project Management Association (IPMA) have standardized project management and have instituted certification programmes for project managers. A wave of interest in project management has brought about the launch of journals such as the *Project Management Journal* and the *International Journal of Project Management*, as well as various meetings, conferences and events. But what has revolutionized the field is the publication *A Guide to the Project Management Body of Knowledge* (PMBOK Guide®). Its publication marked the beginning of structural project management that could be standardized over different organizations.

The ISO has created a standard for project management, ISO 21500, which is a standard that has incorporated all the best practices in project management from all over the world, whereas a significant number are from the PMBOK Guide®. The purpose is to provide guidance for

organizations on the concepts and processes of project management that can have a positive effect on project performance. One of the reasons why the ISO 21500 standard was developed is that companies are constantly looking for answers to the question of why some projects are successful while others are not. Projects within organizations have gained increasingly more attention within the past decade; as Boltanski and Chiapello(1999) suggested, the 'projective city' is an integral part of modern capitalist ideology. What ISO 21500 aims to achieve is to provide a standard that is international and can also be applied to more customized projects, generating a best practice mechanism for organizations to handle their projects so they can be more successful, and which will give them greater control over their processes. The number of organizations involved in developing project management guidelines only shows how increasingly important project management has become and the need for a single universal standard in project management by the world's leading standardization organization, the ISO.

2. ISO 21500

The content of the ISO 21500 standard (ISO, 2012) is grouped into four main chapters. It outlines the scope of the standard and explains who can benefit from using it. It provides a high-level description of the concepts and processes that are considered a form of good practice in project management. The standard then focuses on project management concepts, showing how they relate to each other, and describing the environment in which projects are performed. The last aspect concerns the processes of project management. The standard recommends that these processes be followed for the whole project and/or individual phases. This gives project managers the opportunity to tailor the standard to their specific organizations and use the appropriate processes that apply in each phase. These processes should work for any organization and play a great role in shaping the project management structure of the organization. Significant coordination is needed to align and connect the processes appropriately, but the processes do not need to be applied uniformly in all projects or all project phases. As a result, the application of the standard can be tailored to address what the organization deems appropriate to accomplishing its policy or goal. The processes are viewed from two different perspectives: as process groups from the management perspective or as subject groups from the perspective of a specific theme or as a process group (Stellingwerf&Zandhuis, 2013). This article focuses solely on the subject group perspective.

Table1. Project Management processes cross-referenced

Subject groups	Process groups				
	Initiating	Planning	Implementing	Controlling	Closing
Integration	4.3.2 Develop project charter	4.3.3 Develop project plans	4.3.4 Direct project work	4.3.5 Control project work 4.3.6 Control changes	4.3.7 Close project phase or project 4.3.8 Collect lessons learned
Stakeholder	4.3.9 Identify stakeholders		4.3.10 Manage stakeholders		
Scope		4.3.11 Define scope 4.3.12 Create work breakdown structure 4.3.13 Define activities		4.3.14 Control scope	
Resource	4.3.15 Establish project team	4.3.16 Estimate resources 4.3.17 Define project organization	4.3.18 Develop project team	4.3.19 Control resources 4.3.20 Manage project team	
Time		4.3.21 Sequence activities 4.3.22 Estimate activity durations 4.3.23 Develop schedule		4.3.24 Control schedule	
Cost		4.3.25 Estimate costs 4.3.26 Develop budget		4.3.27 Control costs	
Risk		4.3.28 Identify risks 4.3.29 Assess risks	4.3.30 Treat risks	4.3.31 Control risks	
Quality		4.3.32 Plan quality	4.3.33 Perform quality assurance	4.3.34 Perform quality control	
Procurement		4.3.35 Plan procurements	4.3.36 Select suppliers	4.3.37 Administer procurements	
Communication		4.3.38 Plan communications	4.3.39 Distribute information	4.3.40 Manage communications	

The first subject group is *Integration*, which is about planning the work and putting the plan into action. It covers the start and finish of the project and everything in between, including initiating, planning, implementing, controlling and closing and integrating the processes from all the other subject groups.

The second subject group is *Stakeholders*, which includes the steps necessary to identify the people, groups or organizations that could have an effect on or be affected by the project. It is important to be aware that stakeholders are part of every project and they can be impacted by or can have an impact on the project in favourable or less favourable ways.

The third subject group is *Scope*, which addresses the 'what' question: what 'product' is the project to deliver and what intermediate results need to be produced to obtain the 'end product'? The scope subject group covers all the processes required to define and control the work that is needed and not needed to deliver the project results.

The fourth subject group is *Resources*, which concerns getting the right people to lead, manage and contribute skills to the project while obtaining the materials and facilities, and developing the infrastructure, etc. These people are called 'the project team' and it is beneficial to have the team assigned and available as early as possible. The project manager needs to establish a project team by obtaining the needed resources. The resources may include people, facilities, equipment, materials, infrastructures and tools.

The fifth subject group is *Time*, which focuses on all the necessary steps to manage the timely completion of the project. Time management seeks to estimate activity duration and develop schedules to determine feasible delivery dates, milestones or end dates, taking all known constraints into account. Time management is sometimes seen as the core discipline of project management and various popular software tools are available which primarily focus on time management aspects.

Cost is the sixth subject group and it is typically one of the key constraints of any project. The cost subject group is, therefore, all about defining the budget and managing the actual project costs within the approved budget.

The seventh subject group is *Risk*. All projects have some kind of risk factor and this subject group is intended to address unknown circumstances and the consequences of project changes. Project risks are future uncertainties that may affect the project results, and if the project management team neglects risk management, it will constantly be faced with unforeseen threats or loss of opportunities. Risk management is also about trying to minimize the impact of potential threats on the project results, which are anything that could cause a project to be delayed, incur more expense, or be delivered at lower quality. Constant evaluation is necessary to harvest the full benefits of risk management.

The eighth subject group is *Quality*, intended to support the project to achieve the desired quality of its objectives. Stellingwerf and Zandhuis (2013) contend that 'Failure to meet the project's quality requirements will have a strong negative impact on project performance and the delivery of its expected result. This underlines the importance of quality management'(p. 87).

The ninth subject group is *Procurement*, which is crucial as most projects need products, services or resources from outside the project team, and there will be the need to purchase them. In complex projects, there is often the need for specialists who are 'not available in-house' and it is often not the best option to have a fixed-price contract for every project. Therefore, a more specific arrangement may be needed when the supplier's creativity is required. To deal with these situations effectively, one should apply project procurement management.

The last subject group is *Communication* and it is considered crucial to the success of a project if communications are to be effective. It creates bridges between diverse stakeholders and connects those from various cultural and organizational backgrounds and with different levels of expertise. Project managers need to spend a considerable amount of their time communicating to ensure all participants are on the same page.

3. METHODOLOGY

The objective of this research study is to explore what benefits ISO 21500 can bring to a consultancy company in Iceland. To understand how the standard can be a tool to assist organizations and

companies to improve their project management methods, an international consultancy company was selected. The headquarters are in Reykjavik but other branches are in the US and in Africa. This particular consultancy company was selected since it had previously expressed great interest in incorporating the standard. It is used as a case to illustrate the difference the standard could potentially make if applied. A qualitative study was conducted to understand how the company was managing its projects at the time, what problems itwas facing with regard to project management and what changes it expected from applying the new standard. The interviews were semi-structured (Newton, 2010), so a list of questions was developed to cover specific topics,although the interviewee had a great deal of leeway in how to reply. Out of fourteen employees located in Reykjavík, six were interviewed.

3.1. Validity and Reliability

From the beginning of research to the end it is of the utmost importance that the researcher maintains neutrality to ensure the quality of the research and that it represents the opinions of its participants truthfully. It was also considered appropriate to conceal the identity of the participants so that they would express themselves more openly about the topic, thus placing more emphasis on what was said rather than who said what. It must be noted that in research such as this, the environment is constantly changing and so are the perceptions and interpretations of the interviewees. The analysis is interpreted by the researcher in a way that reflects the interviewer's world view, which affects how the data are represented; the representation can, therefore, not be considered the absolute truth (Attride-Stirling, 2001; Bryman, 2006; Denzin & Lincoln, 2005; Nuttall et al., 2011).

4. RESULTS

The analysis showed that there are several processes that either need to be incorporated or looked into in greater detail. The results reported here are divided into three categories, each of which is addressed in turn.

4.1. Risk Management

When a project is in the early stages, risk forms are completed and analysed for the whole project. There are different kinds of risk that are estimated; for example, country risk, reserves, finance, technology, etc. Thus, there is a particular framework that is used to estimate risk and, as one participant noted; they have often been through the process. Other participants stated that risk analysis was often quite an unclear process that they were not particularly involved with. Risk analysis was done when working for certain companies on a consulting project because the company involved demanded it, but risk analysis was a rather loose term when it came to the company's own projects. As a result, some had not undertaken risk analysis very often and were not entirely aware of the process. There was also unanimous agreement that if it was done, it usually took place in the initial stages; rarely was it followed through or estimated regularly throughout the project. As one participant made clear, the company had not made it mandatory to update risk assessment through the project but this was something that needed to be done. The reasons mentioned for the minimal approach to risk were either that the projects evolved slowly or that they were considered to be quite small. All the participants involved in risk management believed that there was a need to have a clearer process in this regard and to follow the risk analysis throughout the project life cycle.

4.2. Cost and Time Management

Cost analysis and management is not undertaken by everyone in the company but employees contribute their knowledge when it is needed. Thus, there are times when the employees involved sit down and schedule the timeframe and budget. There are certain processes that are discussed, and it is estimated how long they should take and the desired results are established. Most participants agreed that cost and time estimates were incredibly accurate and their work processes were relatively straightforward. One participant described the estimation to be appropriately careful and appropriately bold. Another participant said they were fairly accurate, but with minor differences due to unforeseen circumstances. Planning of time and costs is in the hands of project managers and the financial team and this plan was reported to be the document that was mostly on schedule. Such plans are updated quite regularly because public contracts are often made along the line with new prices that make it necessary to bring planning up to date. Nevertheless, it is the responsibility of project managers to determine how often it is necessary to update the plans. How closely projects need to be monitored with regard to costs and time is said to depend on the project. Thus, overall,

time and cost analysis tend to be on schedule and updated regularly by the employees responsible for planning.

4.3. Project Management

Project management consists of many processes and certain practices that make it more likely a project will be successful. Participants were asked if scoping was performed before a project was taken on, if they developed a work breakdown structure for their projects, how they handled suppliers, if they looked at lessons learned, and if they had a process for addressing and incorporating changes.

When asked about scoping, participants had different views: some said it was done for every project as an outline of the scope is used in developing investment profiles for investors who are interested in knowing more about their projects; others stated that scoping was not incorporated to any great extent as the projects are too small and it was considered over the top to do it. Similarly, in terms of the work-breakdown structure (WBS), the participants considered that this was not done for all projects, especially the smaller ones, but this was established for larger projects.

The participants stated that suppliers are not hired unless they go through a certain process taken care of by one employee. Suppliers are revaluated yearly, in a process which is documented and reviewed every time the supplier is required again. This can relate to consultants, but also includes any services that are needed, such as equipment, insurance, hotels, etc. Through this process, the company establishes whether it will use the services again. This process was considered useful and effective.

The next question concerned whether the company collated documents on lessons learned. This is considered beneficial to learn what has gone well and what has been an obstacle in the life cycle of a project. One participant stated that it was done after each project, whereas another considered that it was not done at all, and yet another was of the view that this again was only done for large projects. The lessons learned are not written down but are mostly discussed in meetings in which the participants discuss aspects of the project that went well or not.

The last question related to change management and whether the company had any processes connected with changes. The participants all agreed that change was something that could be managed better within the company, and several took the view that it was important for everyone to be informed in the light of changes. Participants wanted managers to inform them more of changes and one participant stated that if they were more aware of the importance of changes, they would benefit immensely. He further noted that if the company had realized just how profitable consulting was, they would have started earlier, had a clearer idea of where they were heading and known sooner whether there was maybe a better path to follow or a different focus. Other participants believed that there was no real need for processes or protocols when it came to changes as if something needed changing, they would just do it. Others did not know if they had any processes because changes 'just happen'. The reason for this might be that it is usually the other companies that hire their services which undertake these processes. Many believed that because the company was so small, it was relatively easy to adjust to changes. However, participants also mentioned the day when two employees resigned and no one knew about it until the day they left. Many were displeased that they did not know about this departure and the way in which the ensuing additional workload was simply delegated to different people. Change management is something that needs to be looked into in greater depth, together with a better flow of information.

4.4. Expectations and Roadblocks

All of the participants had some idea of what they would like to improve with regard to projects, costs and risk management. Participants wanted to improve current processes and have a system that provided a better overview of their projects, some kind of an umbrella that keeps all projects together and puts them into one system. Some participants believed that risk and cost management were efficient while others believed they could be updated more regularly and be more visible to others. What was also expected of the standard was that it would result in more disciplined working practices, a sound structure, and greater significance accorded to information sharing. Furthermore, one participant wanted a greater emphasis on team-building, enabling everyone to work better together, as there were considered to be two distinct formations at work: management and employees. As part of this, communication needed to be better between departments, with people

talking more about projects and processes. It was also considered good to have project management meetings for all the staff on a regular basis. Participants also wanted some kind of database or guidebook to look up processes if in doubt, so everyone would be working using the same methods and it would be possible to eliminate unexpected incidents.

There are expectations and then there are roadblocks. When asked if there was anything standing in the way of achieving these expectations, participants were not all optimistic. From past failures to current attitudes, participants felt that changing the company would present a challenge, either because they felt they themselves could not change or they felt others would not be amenable to it. In particular, the average age of those in the company was considered to be an obstacle as not all employees were seen as being open to new ways of working, because of their outlook. Furthermore, the participants all mentioned that there was little time available and extra work would definitely not be welcome. One participant stated both bureaucracy and the extra workload would present barriers, which is a common mistake by many focusing solely on the administrative and bureaucratic elements, instead of focusing on the production process (Cachadinha, 2009). Other participants pointed out that even if a system were put in place, not everyone would follow it. Employees are considered to be so different, independent and so fixed in how they work that '*this standard is attacking a certain kingdom where each and every one is a king*'.

5. DISCUSSION

In this section, the findings and what they might mean for the case company as well as other companies seeking to implement ISO 21500 are discussed. There is considerable potential to run a very effective company even though it is young and relatively small in scale. In such a company, with a staff of fewer than 20 people, it is easier to change the way of working than to change a large-scale organization with over 100 people. What is crucial for a company that is expanding its base and hiring new employees is a solid structure and clear processes. As the case company has already incorporated ISO 9000, it might be possible to set up an online project management system only visible to employees.

Risk management is something that concerns all companies as it is often the evaluation of risk that determines whether a project is taken on or not. It is also strongly related to money, time and the future of the company. What is needed is a mandatory risk assessment process for every project that is taken on, regardless of whether the project is small or large. It would then become an expected part of the project management process that every project manager would have to undertake or assign to specific employees. What could be a beneficial way of continuously estimating risk is for supervisors to request risk updates at predetermined intervals every couple of days/weeks/months, depending on each project. It would benefit the company immensely to have a process that would let it know systematically when and how to treat risk and control it throughout the project. Risk is something that should be updated on the same basis as cost and time management. If done simultaneously, employees and supervisors would have a better overview of the current status of the project, be able to treat risk more efficiently, and develop more accurate time scheduling than is currently the case.

Cost and time areelements that most companies consider precious. These are limited resources and have to be deployed wisely and with great care. One of the ways of being more efficient with these resources is to estimate them, develop schedules and budgets, and control them throughout the project. In the case company, the cost and time analysis were relatively up to date, but it was also noted that participants believed that most analysis reports were rough estimates that had more leeway for change. It would be of great benefit to the company if reports were analysed with more precision and perhaps done simultaneously with risk analysis. Currently, the company is engaged in a few large projects, according to an interviewee, but this might not be the case in the next couple of years. At present, it is possible to keep up to date with costs and timing, but when projects grow in scale, time and number, it will be of the utmost importance to have estimates, schedules and control of project processes that are as precise as possible. What the ISO 21500 standard recommends is that organizations estimate costs in terms of units of labour per hour or number of equipment hours. It also takes into account the cost of possible risk and how the distributed work can be broken down into appropriate levels for the project's budget. The consultancy company in this case does follow these principles, but what is lacking is a stable procedure for all projects, and visibility so that everyone in the project team knows how the project is progressing in relation to both time and budget.

There are many processes that make up project management. It was not possible to take each and every process into account when asking participants about the ways in which they manage projects. The scale and size of the project seems to have a significant influence on how it is documented and developed and the extent to which processes in project management are followed. As an example, lessons learned were poorly documented and only held in memory, whereas those of suppliers were documented with great precision. This can be interpreted as an ad hoc approach, in which it is primarily up to individual project members how far processes are developed. The participants stressed the need for flexibility in their projects, but the ISO 21500 standard does not stand in the way of flexibility as processes can be controlled and changed with time if that is what is agreed upon.

6. CONCLUSION

There are several benefits ISO 21500 can bring to an international consultancy company. One of the main benefits is setting out a common process for all projects in which employees and managers synchronize their work and minimize shortcomings. According to the standard, all projects have to go through the same processes and procedures, as quality is not only expected within larger projects but all projects the company produces. The standard, therefore, does not discriminate between projects. The application of the standard thus enables companies to adjust the way of working so it is possible to ensure quality for all projects, but also give employees and managers the room to focus on the bigger picture rather than unnecessary mishaps.

Another benefit the standard could bring is solidarity between management and employees as, if used wisely, it can create clearer boundaries of what is expected of everyone and stronger ties in terms of working as a team. Organizing priorities and creating clearer processes and a stable structure would reduce stress and uncertainty, giving employees and managers more freedom and ease to work on their projects and collaborate to ensure everyone has projects to work on.

The final benefit to be mentioned here, although there are a great many more, is quality. Quality is something that every company needs to address as it is what the company stands for. The implementation of the standard can give companies the opportunity to evaluate what kinds of work procedures they want to incorporate and how they will embed that notion of quality in the minds and behaviours of their employees and managers. Implementing a standard is almost impossible if the staff members do not welcome the changes it might bring. So, not only does it take time and effort to implement a standard, but it will come to nothing if people do not use it. Therefore, a company really has to ask itself difficult questions if it wants to incorporate ISO 21500:

- Why do we want to implement the standard?

- Are we willing to invest time and effort to derive long-term benefits?

- Are there those who do not wish to partake in this? If so, why?

- What quality do we want to share with our customers?

Quality is something that needs to be instilled into every single person as it is not only a way of working, but is also an attitude or a way of thinking. Some may tend to see certification as an end in itself, rather than a means of implementing an ongoing quality system which seeks the objective of sustainable improvement (Love & Li, 2000). It has to be understood why the company does things in accordance with a standard to be able to work towards the associated notion of quality. Ensuring that employees are aware of where the company is heading and the standards the company expects can help employees to work together to achieve that quality. This could be the opportunity to make a good company great.

6.1. Limitations

As with any research, this study has certain limitations. In particular, only one company was involved in the researchand there is limited information about other companies that intend to incorporate this standard. In future, it would be interesting to undertake a comparison of organizations in terms of what benefits ISO 21500 brings when it is better known and in wider use. Furthermore, it would be interesting to see which processes gain more emphasis and how they contribute to better quality and efficiency across different industries.

REFERENCES

Attride-Stirling, J. (2001). Thematic networks: An analytic tool for qualitative research. SAGE Publication, 1(3), 385–405.

Boltanski, L., &Chiapello, E. (1999).Le nouvel esprit du capitalisme. Paris: Gallimard.

Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? Qualitative Research, 6(1), 97–113. doi:10.1177/1468794106058877

Cachadinha, N. M. (2009). Implementing quality management systems in small and medium construction companies: A contribution to a road map for success.Leadership & Management In Engineering, 9(1), 32–39. doi:10.1061/(ASCE)1532-6748(2009)9:1(32)

Denzin, N. K., & Lincoln, Y. S. (2005).The SAGE handbook of qualitative research. Thousand Oaks, CA: SAGE.

International Standard. (2012). ISO 21500 : Guidance on project management.

Love, P. D., & Li, H. (2000). Overcoming the problems associated with quality certification. Construction Management & Economics, 18(2), 139–149. doi:10.1080/014461900370771

Morris, P. W. G. (2013). Reconstructing project management. Oxford: John Wiley & Sons.

Morris, P., & Hough, G. H. (1988).The anatomy of major projects: A study of the reality of project management. Oxford: Wiley.

Newton, N. (2010). The use of semi-structured interviews in qualitative research: Strengths and weaknesses. Retrieved 20 November 2013, from http://www.academia.edu/1561689/The_use_ of_semi-structured_interviews_in_qualitative_research_strengths_and_weaknesses

Nuttall, P., Shankar, A., &Beverland, M. B. (2011).Mapping the unarticulated potential of qualitative research: Stepping out from the shadow of quantitative studies.Journal of Advertising Research, 51(1), 153.doi:10.2501/JAR-51-1-153-166

Packendorff, J. (1995). Inquiring into the temporary organization: New directions for project management research.Scandinavian Journal of Management, 11(4), 319–333. doi:10.1016/0956 -5221(95)00018-Q

PMI Standards Committee. (1987). Project management body of knowledge (PMBOK). Pennsylvania, USA: Project Management Institute.

Stellingwerf, R., &Zandhuis, A. (2013).ISO 21500 guidance on project management: A pocket guide. London, UK: Van Haren Publishing.

AUTHORS' BIOGRAPHIES

Lara Kristin Kristinsdottir is currently Director of Quality, Health and Safety at Reykjavik Geothermal, which is a geothermal company devoted to bringing sustainable and clean energy to the developing countries. She has a Master's Degree in Environmental and Natural Resources from University of Iceland and a Master's Degree in Social Anthropology from London School of Economics.

Eðvald Möller is a teacher at the University of Iceland. He has a M.Sc. degree in Industrial and Operational Engineering from KTH Royal Institute of Technology, Sweden, and an MBA with a focus on management, operations and financial companies from the Management School of Edinburgh. His areas of expertise are operation research and logistics, optimization, feasibility studies and project management. Along with academic research, he works as a consultant with Icelandic and foreign businesses. He has written several books in the fields of model building and project management. He is in a doctoral programme at Imperial College, London.