Exploring Different Subjective Patterns of Perceived Barriers by Project Managers in the Face of Sustainable Project Management

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Exploring Different Subjective Patterns of Perceived Barriers by Project Managers in the Face of Sustainable Project Management

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List of Abbreviations

FH-Stg.	FH-Degree Program (Fachhochschul-Studiengang)
MA	Master of Arts
SPM	Sustainable Project Management
TPB	Theory of Planned Behaviour
HAPA	Health Action Process Approach
Q-SV	Q-Sort Value
Z-SCR	Z-Score

Abstract

Sustainable disruptions are widespread and have reached the field of project management, where a wider promotion and implementation is desired. As adoption of sustainable methods and applications is gaining increasing awareness and utilisation, various challenges are attached to it, bearing obstacles from both organisational as well as personal viewpoints. Despite studies contributing to the elucidation of barriers faced by organisations, variations of perceptions perceived by acted-upon project managers are pivotal yet remain academically overlooked for the most part. Grounded in the *Theory of Planned Behaviour* and employing Q-Methodology, this study extracts subjectively perceived barriers faced by 28 project managers when executing sustainable project management practices. Results disclose three patterns of perceptions, with its key elements enriching the understanding of what hindering factors are experienced through the business professionals' lenses, notably differing from one another. As analysis shows, the perception of control-related hindrances are most prominent amongst all perspectives, whereas barriers related to behaviour or normative nature do not allow for a single generalisation. Accordingly, with these three beliefs directly affecting behaviour, findings confirmed that an appreciable level of six subclassifications of impediments further unravels obstacles to be overcome in sustainability dimensions within project management. As such, motivational and knowledge-grounded obstacles are underrepresented, as opposed to perceived barriers of policy-related nature. Addressing the gap in existing literature, this study recognises the role of project managers and their personal challenges experienced upon the enactment of sustainability in project management and therefore contributes to a better comprehension of barriers impacting sustainable values, intentions and resulting behaviour.

1 Introduction to the Topic

As concerns regarding sustainability have reached an abundance of industries within the 21st century, the project management sector in particular is being faced with severe difficulties upon implementing a wide-reaching set of standards and practices fully covering sustainable aspects (Sabini & Alderman, 2021, p. 380). With the continuation of adapting an environmentally-friendly strategy and thus fostering innovative competitiveness, results are numerous publications covering the aspects of sustainable integration in project management in general, such as exemplified by Silvius and Schipper (2014). By explicating the reverse frame of reference of what, as a matter of fact, hinders project implementation strategies and practices, it will advance the understanding of barriers to sustainable project management as perceived by project managers, marking the topic of this master thesis.

1.1 Research Problem

Sustainability in project management has gotten serious attention in the academic project management community, with the highest ranked project management journals publishing literature regarding the combination of sustainability and project management (Silvius, 2017, p. 4). According to Sabini et al. (2019, p. 824), an extensive and systematic literature of some 770 publications, ranging from 1993 to 2017, revealed a continuous emergence of project management literature enriched with sustainability aspects.

The practical integration of sustainable business practices in order to realise project management objectives is still a rather ubiquitous undertaking, as managing projects and consolidating sustainability demands shifting scopes in terms of time, activities and concerns (Sabini et al., 2019, 821). The continuation of elucidating implementation techniques of sustainability in project management provides guidance for said sector. Nevertheless, it neglects one prominent aspect, namely the perceived barriers and hindrances by project managers themselves striving towards sustainable enactments (Toriola-Coker et al., 2021, p. 1).

Having said so, the majority of academic papers explores sustainability concerns from an organisational viewpoint: Whilst Brook and Pagnanelli (2014, p. 46) shed light on the integration of sustainability in the innovation project portfolio management process of product development, Caldera et al. (2019, p. 575) come to speak of enablers and barriers for adopting a leaner and greener business strategy for globally-operating SMEs. "Linking Knowledge with Action for Sustainable Development" (Clark & Holliday, 2006) deals with

organisational and institutional linkages between sustainability and performance outcomes (p. 2), whereas Kivilä et al. (2017, p. 1167) assess the controlling actions which organisations use for sustainable project management.

Such strong focus on organisations themselves has been criticised, among others, by Sinxadi and Awuzie (2021), that until now we are facing a "[...] paucity of literature eliciting perspectives of project management professionals [...]" (p. 1). On the contrary, with project managers having to encounter increased complexity of sustainable projects, their role for adoption and implementation of sustainability tasks and goals becomes of uttermost importance (Borg et al., 2020, p.1).

By becoming aware of not only organisational but also personal barriers towards sustainability, knowledgeable project management in accordance to sustainability accounts for a critical metric in measuring a project's success (Gachie, 2019, p. 313). Thus, by bridging the research gap in the lack of behavioural based attitudes and perceptions in the field of sustainable management, this thesis aims at the validation of perceived barriers faced by project managers and henceforth the shared understanding of the practical implication it conveys.

1.2 Justification of the Importance of the Problem

As academic literature started to begin shedding light on the convergence of project management and sustainability, a growing number of studies solely focuses on the unification and grouping of publications with regards to sustainable project management (Armenia et al., 2019; Sabini et al., 2019; Silvius & Schipper, 2014).

Other publications (Sinxadi & Awuzie, 2021; Skordoulis et al., 2020) take into account a more behaviouristic viewpoint, namely distinct perceptions and attitudes of project managers towards the field of integrating sustainable process-based practices. Several researchers have been concerned with key characteristics and perceptions concerning project management sustainability in a wide-reaching field of diverging project-based industries and sectors. Hence, re-occurring attention is granted towards general as well as specific drivers and to assist the implementation of sustained projects.

Lozano (2015, p. 40) established a *Corporate Sustainability Drivers Model*, depicting both external and internal drivers, or causes for intersecting project management with sustainable practices. Offering a more thorough analysis and ranking of sustainability drivers, Lozano and Haartman (2018, p. 509) as well as Silvius et al. (2017, p. 1134) aim at

highlighting such sustainable drivers and the impact associated with managers' perceptions.

Despite other publications scrutinising not only sustainable project management drivers but in addition also sustainable hindrances (Bakos et al., 2020; Caldera et al., 2019; Hwang & Tan, 2012; Lee, 2015; Sabini & Alderman, 2021), the main focus is primarily directed towards enablers and barriers in sustainable business processes, not considering the behavioural aspects faced by project managers themselves.

Specifically, as industries hailing from various sectors place great importance on sustainable actions, project managers are at the core of said tasks and thus are expected to be knowledgeable and ready to work with lasting and environmentally-impactful practices.

Borg et al. (2020) have published their work by separating the key barriers faced amongst different stages of a project or programme, providing a solid relevance as to why the topic of sustainability is multi-faceted and therefore requires a larger share of (academic) attentiveness. Among others, multiple barriers to adoption of sustainable project management practices faced by project managers already start to arise in the pre-project phase. Examples of such are setting defined and agreed-upon sustainability aspects in projects with the client; fostering environmental consciousness amidst external stakeholders as well as project-internal teams and contributors; ensuring sustainably based business cases and investment analyses and also including sustainability in risk management (p. 4).

As for the operational and closing-down project phases, hindrances and noteworthy contrivances encompass sequencing, scheduling and monitoring of agreed sustainable standards. Additionally, coordination of sustainable requirements during a project's active execution as well as in regard to the finalisation and hand-over are mentioned. Finally, obtaining post-occupancy evaluation surveys as to cross-check sustainable implementations and fostering the learning curve for future projects have been scrutinised (Borg et al., 2020, p. 4).

Further, as this thesis aims at proving the relevance and contribution that stimulus and barriers are not perceived of equal nature by individual project managers, the finding of generalisations is not in the interest of the researcher. Instead, it sheds light on multiplex matters whenever human subjectivity is in place. The methodology used, extensively discussed in *Chapter 3* Research Design, can reveal such different patterns and inflict distinctive frames on individual project managers (Zabala, 2014, p. 164).

By considering subjectively perceived sustainable project issues, it is paramount to continue working on finding a variety in subjective perceptions, as "sustainability challenges can be seen as innovation opportunities" (Martens & Carvalho, 2017, p. 1098), yet again stressing the importance of this research paper.

1.3 Deficiencies in Our Existing Knowledge

Following the *World Commission on Environment and Development* (WCED), established under the umbrella of the United Nations, one distinctive phrase guides the construction of the underlying thesis: The definition of sustainable development in the sense of "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Borowy, 2014, p. 3).

As both project management and sustainability have gained increased awareness by organisations in a variety of differing industries (Armenia et al., 2019, p. 1), the consolidating project managers' attitudes in regards to this subject has been of scarcity, as both drivers and barriers towards sustainability most commonly follow the three pillars of sustainability environment, namely the economic, environmental as well as social perspectives (Gachie, 2019, p. 317).

Nonetheless, present-day studies have stressed the importance of the project managers' roles and integration being crucial concerning the attainment of setting impactful sustainability goals (Borg et al., 2020, p. 1).

In spite of the topic having been addressed by a multitude of publications (Ormazabal et al., 2018, p. 158), little consensus is present between factors helping as well as hindering companies facing the adoption of sustainable principles (Silvius et al., 2021, p. 2).

Moreover, as there *does* seem an appreciable awareness with regards to sustainable actions within the economy, implementation is said to be still in its early stages. As newly introduced environmentally-friendly practices inflict certain barriers and challenges alongside, progress is neither widespread nor uniform (García-Quevedo et al., 2020, p. 2451).

These deficiencies in existing literature bring upon the need for examination of not merely organisational-related hindrances, but also the exploration of variety of perceptions held by the individuals at core, namely the project managers themselves. In order to advance the studies in this field and hence tackle the deficiencies at present, the decision to rest this research on people-based attitudes and behaviours as opposed to organisational barriers relates to earlier findings of Stoneman and the corresponding analysis done by Cunningham

(2011). They argue that in the face of transition towards sustainability, "soft innovation is a major work of scholarship in a critical field of industry and policy studies" (p. 244). Henceforth, addressing not only matters of hard or functional, referring to purely organisational-based factors, ought to be enlarged by softer factors likewise (Cunningham, 2011, p. 244).

As this thesis writes about areas overlooked by past studies, namely the so-called *soft types*, a brief exemplification of the distinction shall be provided: Being categorised as *hard types*, these types are footed in research, such as design-driven products or cost-cutting processes; To all intents and purposes essential when looking at sustainability drivers and barriers in firms. However, soft types are largely concerned with cultural and persona artefacts. In addition, they are found to be more widespread than initially presumed (de Jesus & Mendonça, 2018, p. 77).

Borrowing from two works of the international relations scholar Nye (1990, 2006), technical or economic means - representing the sustainability enablers and hinderers of an organisation and its projects - account for hard powers, whereas soft powers are affiliated with bringing about change through values and practices shaping attitudes and preferences of people themselves (Nye, 1990, p. 167). This power conceptualisation gives way to a more modern approach in current times, utilising it as a further rationale for analysing sustainability barriers on a subjective, manager-based perception.

The key aspect thereby aims at finding evidence and stimulating to a greater extent the linkage of sustainable project management integration not only to specific actions but allowing for a concise overview tailored to specific personal attitudes of project managers. In the pursuit of grasping a solid understanding of the practical impact, this thesis' research is guided by the prime motivation of covering the gap by finding different patterns among a group of business professionals and revealing their perceptions on sustainability in project management.

1.4 Contribution

As merely little research has been conducted on the perceived personal barriers towards the integration of sustainable project management practices, there is a need for the creation of a new framework. Project managers seeking to venture into a more sustainable-based project managing juncture will benefit from a better discernment of sustainable practices seen from a different focal point: As better apprehension of what constitutes not

drivers but veritable barriers towards successful integration of sustainability as perceived by project managers, this thesis seeks to assist to connive with business professionals facing similar state of beings by clearly stating the main hindrances and therefore being able to tackle them down to precision.

The outcomes of this master thesis may assist project managers, business professionals and policy makers to become cognisant and grasp a sound comprehension of barriers impacting sustainable project management practices, but also advancing the academical field by enriching existing literature through new insights (Costache et al., 2021, p. 17).

1.5 Purpose Statement and Research Questions

The purpose of this master thesis is to develop a new framework. By utilising a mixed research strategy, the perceived barriers faced by project managers from differing industries upon implementing sustainable project management practices in daily business operations are assessed. Given the central phenomenon of sustainable project management, the qualitative part of this study intends to elucidate and describe a set of certain variables, namely behavioural attitudes and preferences, influencing the usage of sustainable practices. Simultaneously, the principal focus of behavioural science in the face of sustainability management for project managers is being explored. As the research design follows Q-Methodology, the purpose of the quantitative section is to associate the influencing behaviouristic aspects. This draws on the *Theory of Planned Behaviour* (Ajzen, 1991) by relating the three pillars of behavioural influences to the findings of project managers' attitudes towards sustainable barriers.

With the focus of this thesis being the perceived barriers by project managers in the light of sustainable practice implementations, the phenomenon of barriers is described as "contradictory sustainability constraints" (Sabini & Alderman, 2021, p. 379), leading project managers to experience tensions stemming from both the external environment as well as intrinsic, behavioural factors (p. 379).

Perceived barriers derive from the notion that project managers, due to pressing emphasis on sustainable projects in an array of industries, ought to be knowledge about current thematics and practices, playing a key role in the creation of said undertakings. Thus, such standards can cause conflicting barriers among business professionals, as an expected task outcome's success depends large on its managers, who not only serve as integrators but also facilitators for delivering sustainably developed projects (Borg et al., 2020, p. 3).

The research is guided by the main question of *What different subjective patterns of barriers to adoption of sustainable project management (practices) do project managers experience?,* allowing this thesis to find not one shared generalisation across sustainable project management, but illuminating different patterns based on personal behaviour applicable to a wide-reaching field of project managers.

To subgroup even further, the qualitative section of this thesis is concerned with the distinct explication of an array of personal hindrances towards sustainability implementation, hence allowing for a more precise and narrower framing of the question *Which subjective and differing patterns do project managers discern regarding sustainable project management and how are they ought to be labelled?* as well as *How do the findings relate to the framework of the Theory of Planned Behaviour?*, concerning project managers' attitudes, beliefs and behaviouristic traits.

2 Theoretical Framework & Literature Review

This section discusses the main theoretical framework underlying this thesis. In the first subchapter, an overview describing behavioural based models suitable to serve as a fundament for the quantitative part will be given, along with some specifics as to why certain frameworks have not been decided upon. *Chapter 2.2* The Integration of the TPB will focus on the chosen theoretical framework, along with its strengths and weaknesses and its integration to this thesis towards the derivation of a framework of sustainability and perceived barriers. Concludingly, findings of related literature concerning factors influencing sustainable behaviour will give way to this thesis' research design, yet again underlying the fundamental evidence for the need of deeply scrutinising this topic in current times.

2.1 Relevant Theoretical Models

By drawing the attention to perceived barriers faced upon the implementation of sustainability practices in project management, this thesis works towards being conducive to diverge from organisational based sustainability barriers to a more human-based notion. Through the exploration and divulgence of personal and subjective patterns of project managers from an array of industries, a deeper comprehension of personal factors and different patterns hindering the application and execution of sustainability based on behavioural aspects is provided for. As such, this section is concerned with an initial introduction to several, already established theoretical frameworks, highlighting their specifics as well as both strengths and weaknesses and justifying as to why one model has been found to be suitable to derive its framework as a basis.

A multitude of behavioural based explanatory concepts are readily to access. With the aim of expounding sustainability barriers influenced by becoming cognisant of project managers' behaviours and attitudes, a theoretical development theory is needed in order to improve the understanding and better predict assumptions and future ways of behaving upon researching current subjective attitudes towards the integration of sustainability from a personal notion (Sniehotta et al., 2014, p. 4).

2.1.1 PRIME-Theory (Former: Theory of Addiction)

One of such theories, emphasising temporal dynamics, constitutes West and Brown's *Theory of Addiction* (2013), the successor of the 2006 released theory under the same name. The theory investigates an array of theoretical approaches with the ultimate goal of

delineating the range of phenomena titled "addictions", severe and powerful motivational factors of humans to engage in particular behaviours and set of actions. The theory sources from a single model and rests on the assumption that a range of features account for manners in which humans behave. Including conscious choices, subjective desires and impulses as well as self-control, these contribute enormously to the prediction of future motivation and behavioural outcomes. Since then, this theory has been revised and renamed into the updated *PRIME-Theory* (West & Brown, 2013, p. 6).

Defining said theory as not making extensive assumptions about cognitive discernments but rather borrow from experimental tests and empirical substantiation (Sniehotta et al., 2014, p. 4), the TOA, or PRIME-Theory therefore, does not showcase a framework aimed at explaining the accumulation of all human behavioural predictions, but yields a conceptual system allowing for an allocation of existing theories whilst simultaneously bringing forward key elements of focus (West & Brown, 2013, p. 2).

With researchers inquiring into several other theories focalising on how combinations of behavioural beliefs and evaluations have a substantiate effect on behaviour itself, they do argue that strongly mathematical based theories, such as the often cited *Subjective Expected Utility Theory* (Baron, 2008), ought not to be applied for real-life scenarios. As assumptions and predictions regarding behaviours and preferences are subject to deviations, decision-making processes as well as attitudes are claimed to be more haphazard than numerical values of outcomes (West & Brown, 2013, p. 77).

Addressing this concern, the emergence of the PRIME-Theory questions not only conscious decision-making based on subjectivity, but also incorporates the ideation of linking stimuli to responses not involving intentional choice, most prominently the development of habitual behaviour patterns based on operant learning and classical conditioning (West & Brown, 2013, p. 114).

The decision as to why West and Brown's theoretical model will not serve as the prime source of theory for this thesis is due to its heavy reliance and borrowing from the motivational theory and its incorporation of several other factors not relevant for the specific focus of the underlying paper. In spite of this theory being rested on a common-sense rational model incorporating concepts of self-control, impulses and habits, the complexity and key concepts used would not adequately cover the main essence of revealing and interpreting subjective patterns (West & Brown, 2013, pp. 192-193).

As the original TOA has been developed with the intention of excessive, partly negative motivation causing people to follow certain behavioural patterns, the framework itself has been criticised of falling into the trap of purporting results using a combination of already established theories and claiming to encompass explicit assumptions whilst violating chief scientific tenets. Furthermore, both authors continue to publish various counterarguments, acknowledging that to which extent this theory adds value and manages to fill gaps is yet subject to further assumption testing, as "this theory is still very much 'work in progress'" (West & Brown, 2013, p. 10).

2.1.2 Multilevel Goal Conflict and Goal Facilitation Theory

A theory incorporating multiple goals leading to certain behaviours has been established by Presseau et al. (2013): A multi-level design elucidating individuals' personal goals under the umbrella of personal projects analysis. The rudimentary objective of this study and its proceeding theory follows the conviction that goals, and hence their corresponding behavioural traits, are rarely pursued in isolation, but rather require and are constraint by people's limited resources available (p. 1179).

Investigating a participant's goal system, the consideration for conflicting as well as facilitating relations may help in the pursuit of a better apprehension regarding behavioural patterns. The promotion of this theoretical framework is supported in the sense that literature has peaked with theory-based works on predicting behaviour, therefore it appropriates on scientifically sound models. As will be discussed later on, the goal conflict and facilitation theory even addresses flaws of the TPB (Ajzen, 1991) by eliminating the sole focal point of a single goal-directed behaviour, which finds itself in segregation from a broader context relating to behaviour-specific intentions (Presseau et al., 2013, p. 1180).

Previously published studies utilising the approach of accelerometers assessed how physical activity relates to motivationally inflicted goals. The theory, nevertheless, lacks evidence with regards to the prediction of less active, or passive individuals' behaviours constrained by external resource contexts, thus being seemingly unsuitable to further advance this paper's goal in revealing subjective patterns in the sustainability context (Presseau et al., 2013, p. 1186).

2.1.3 The Health Action Process Approach

Mostly availing itself in the field of the health industry, *The Health Action Process Approach* (Schwarzer et al., 2008), abbreviated as HAPA, catechises the assumption that a

person's willingness to change serves as an optimal predictor for actual change. However, as people do not always showcase an alignment between their intentions and behaviours, the found discrepancy lists a multitude of potential causes, such as the emergence of unforeseen barriers of giving in to temptations, calling for more proximal constituents fostering and giving grounds for the shift of intent to measure-taking (p. 1).

Whenever human behaviour undergoes change, such as the transformation towards sustainability, two generic processes rise to the surface, namely motivation and intention formation, also known as goal setting, volition and action or a goal's pursuit. Upon comparing the TPB with HAPA, it becomes evident that the former places its chief point of convergence on the initial motivational phase, whereas the latter places emphasis and elaborates on the action part, or for better clarification, the translation of motivation into doing (Schwarzer, 2013, p. 54).

HAPA originated as an attempt to overcome limitations of antecedent theoretical models, postulation factorial patterns based on motivation, at last resulting in a sustained behaviour change (Schwarzer et al., 2008, p. 6). The outcome of proposed theory is a two-stage model including a motivational and volitational phase. Intention influencing factors are, among others, action self-efficacy, outcome expectancies and risk perception, causing intentions to in turn influence both action and coping planning. By developing an inclination towards a specific behaviour and its intended change, said intention ought to be transformed into an action plan and feasible maintenance, thus calling for a postintentional volition phase, comprising adjoining factors such as initiative, maintenance and recovery (Schwarzer et al., 2008, pp. 6-7). *Figure 1* below illustrates a simplified version of what has just been made clear in written form:

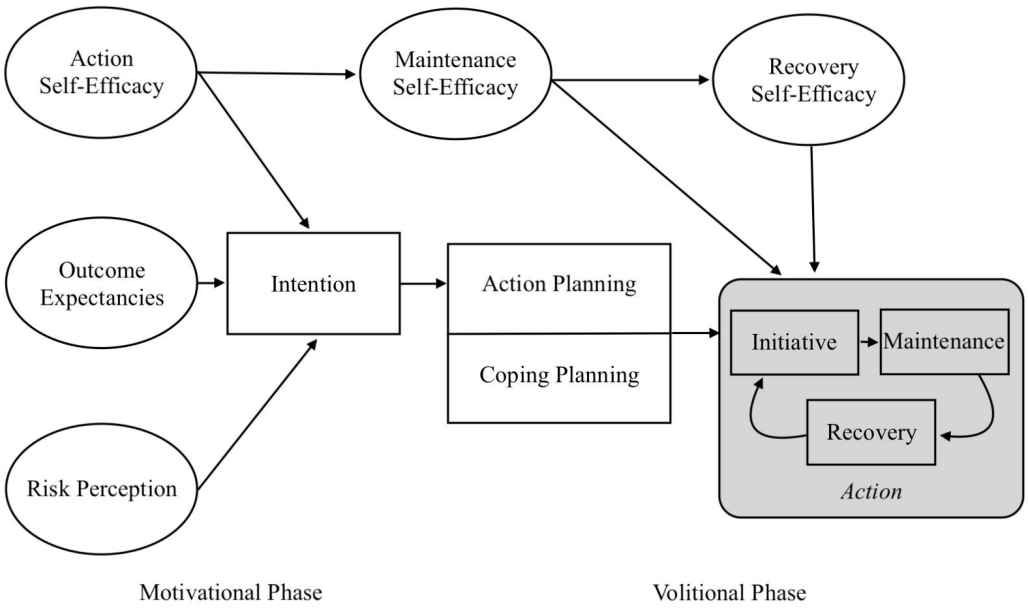

Figure 1: Diagram of the Health Action Process Approach (HAPA; Schwarzer, 2008, p. 6, modified February 2022)

The HAPA theory implies a co-existence between the two phases, proposing it a suitable model for the underlying thesis. Furthermore, a comprehensive range of application having applied the theory on seven distinctive examples by the author itself and, as a result, has had a wide-reaching impact on further empirical research, the data appears to be in line with manifold samples from various subgroups (Schwarzer et al., 2008, p. 6).

Nonetheless, as this master thesis rests upon the aim of identifying individuals and their different subjective patterns in accordance with sustainability mindsets, the analysis required proposes a stage model as a better fit, whereas the HAPA model constitutes a hybrid mode, bridging the gap between a stage and a continuum model. Resultingly, its application is being judged feasible but has so far only been applied to sectors in the health-related industry. Schwarzer et al. (2008) themselves argue that this theory, for future purposes, ought to be supported by the integration of another theoretical model, such as a shared combination of HAPA and TPB, allowing for a theory evolution which does not merely compare determinants and their correlations, but signifies the need for experimental manipulation and follow-up valuation of maintained behavioural aspects (pp. 23-24).

Having proposed and extensively discussed some of the most suitable alternative theoretical models aiding this thesis, the upcoming subchapter will draw its attention to the final selection of the framework, justified by deliberately listing its strengths but not failing to acknowledge its limitations and criticisms.

2.2 The Integration of the TPB

With the *Theory of Planned Behaviour* being first introduced in 1985, it has since become among the top most cited models in regards to predicting social behaviour of humans (Ajzen, 2011, p. 1113). As formulated previously, the theory permits the classification of barriers in a sustainability context on a subjective level, similar to the HAPA model. Having originated as an extension of the *Theory of Reasoned Action* (Ajzen & Fishbein, 1980), this theoretical framework qualifies as it places just as much emphasis on an individual's intention as external factors influencing behaviour. The structural equation model incorporates not only the two main preintentional factors of attitudes and subjective norms, but also the acknowledgement of perceptions and behavioural beliefs being more complex in nature and thus requiring a more thorough revamping (Ajzen, 1991, p. 183).

This argumentation rules out the recently discussed HAPA model, as Schwarzer et al. (2008) themselves concede that "future research should include [...] constructs from this theory (HAPA) and [...] constructs from a different theory (such as TPB)" (pp. 23-24).

Providing an in-depth ground as to why this particular theory has been decided upon, the following sections will recount the theory's core striking points, give room to its limitations and will finally be related to the discussion of factors influencing sustainable behaviour.

2.2.1 Justification of the TPB

Integral to the TPB is the concernment of predicting intentions; Explaining behavioural intentions, at its core lie behavioural, normative and control beliefs in addition to attitudes, subjective norms and perceptions of behavioural control. Caution must be taken whenever a relatively low intention-behaviour relation surfaces, as in this case the theory recognises its own limitations, due to the fact that such a relation is primarily moderated by factual control over one's behaviour (Ajzen, 2011, p. 1115).

The sufficiency of the framework is further to be undermined as it does not claim to be fully liable for all variance in intentions, but rather accounts for "imperfect predictive validity" (Ajzen, 2015, p. 132), suggesting that reliability not frequently exceeds 0.80, indicating a theoretically set limit. However, due to the typical application of the theory, the inclusion of a relatively small number of items as well as the direct assessment of each of the chief TPB components, the addition of more variables can lead to more precise intentional predictions (p. 132).

In contrast to the previously disseminated information regarding the other theoretical models, the TPB cannot be categorised as a theory of behavioural change. Instead, the designed framework serves the sole purpose of assisting the explanation and prediction of individual intentions and behaviours, which is at the heart of this master thesis. By stipulating the constituents' attitudes, subjective norms and perceptions of controls, the model does not claim the proposition of people behaving in a purely rational manner. It therefore proclaims no presupposition of objectivity but rather acknowledges that the formerly mentioned components follow people's beliefs in a reasonable and consistent manner. Hence, it allows this framework to be used in the face of subjectively perceived conceptions by project managers (Ajzen, 2015, p. 133).

The TPB, "[...] a theory designed to predict and explain human behaviour in specific contexts" (Ajzen, 1991, p. 181), serves as an extension of its 1980 developed predecessor *Theory of Reasoned Action* (Ajzen & Fishbein, 1980), having reworked certain limitations found in the first theory. The construct of the initially introduced theory followed merely the two factors of attitude and subjective norms influencing an individual's behavioural intention and thus his or her behaviour, ultimately. Despite this model emphasising viability in terms of predicting moral behaviour as well as the formation of attitudes and subjective norms, it has been argued that behavioural beliefs and perceptions are undoubtedly more complex and therefore require a more structural equation modelling, which is why the Theory of Reasoned Action has been doomed as unfitting (Vallerand et al., 1992, p. 108).

With the remodelled model, now titled the "Theory of Planned Behaviour", the core factor of the model, an individual's intention, remains untouched. TPB advocates the capturing of motivational factors through intention and as a result influencing behaviour. Strong emphasis is placed on perceived barriers of project managers in accordance with their intention.

At this point, it shall be noted that the general assumption is as follows: The stronger an intention to engage in a certain behaviour (here: the implementation of sustainability practices), the more likely the performance of said behaviour will be. To some extent, nonetheless, intentions do not only depend on project managers' own wills, but rather must be aligned with external factors in terms of availability of resources and opportunities, such as knowledge about the topic, necessary skills available or time and money constraints (Ajzen, 1991, p. 182).

The prime reason as to why integrating the TPB into this thesis constitutes the second factor, namely the perceived behavioural control. To illustrate the importance, Ajzen (1991, p. 183) argues that, whilst there is undeniable doubt of the significance of actual behavioural control, meaning the resources available exerting influence on people's intentions and thus behaviour, a vast substance of the impact on intentions and actions is the perceived behavioural control, a factor by which the original theory has been extended. The perception of barriers faced by project managers is, as a result, of undeniable significance, as perceived behavioural control, in togetherness with behavioural intention, results in a direct prediction of behavioural actions. In other words, "performance of a behaviour is a joint function of intentions and perceived behavioural control" (Ajzen, 1991, p. 185).

2.2.2 TPB and its Beliefs

At its core, by revealing different patterns of perceived barriers, the most basic postulation of TPB is that behaviour serves as a function of principal information or beliefs which in turn are of high relevancy to behaviour. Due to the fact that beliefs are manifold, before therefore listing and becoming cognisant of said hindrances on the basis of the theoretical framework of TPB, the factors which will allow us to obtain a better comprehension of the perception of sustainable behaviour, aiming at the linkage of beliefs and behaviour, follow three chief types of beliefs:

1) *Behavioural Beliefs:* Assumed to have an influencing character on attitudes, which in succession guide behaviour (Ajzen, 1991, p. 189); Briefly put, behavioural beliefs make up that part of beliefs which zero in on the likely end results of a given behaviour and the assessment of such outcomes (Barneveld & Silvius, 2022, p. 6). In addition, the stronger the inclination and more favourable a particular attitude of a certain way of behaving is, the higher an individual's intention to undertake and perform such behaviour (Cordano & Frieze, 2000, p. 628).

2) *Normative Beliefs:* Account for the salient indicators of subjective norms (Ajzen, 1991, p. 189); These beliefs constitute normative, or confined to, external expectations and hence a self-imposed motivation for compliance with other's suppositions. Furthermore, with normative beliefs often resulting in discerned social pressure and subjective norms, it serves as a contributing and guiding determinant of individual's perceptions of evaluations and successively the adherence to those formed evaluations (Barneveld & Silvius, 2022, p. 8). Ajzen (1991) puts it without any adornment into perspective: Being concerned with the

probability of an important referent's person or group of people's approval or disapproval of performing a certain behaviour is what comprises normative beliefs (p. 195).

3) *Control Beliefs:* Lay the foundation for perceptions of behavioural control (Ajzen, 1991, p. 189); Control beliefs, in essence, determine the factors which might foster facilitation of a particular behaviour or impede the performance of such, contributing to the perceived behavioural control of individuals (Barneveld & Silvius, 2022, p. 8). Ajzen (1991) refers to control beliefs, which eventually shape and affect intention and action, a set of beliefs dealing with "the presence of absence of requisite resources and opportunities" (p. 196). They are noteworthy as they may not only be based on past experiences and its corresponding behaviours, but also take into consideration externally sourced, or second-hand information, by the experiences of external parties. Hence, the researcher asserts that, with individuals entrusting their own resources and opportunities, the fewer obstacles they anticipate in the first place, the greater the perceived control over their behaviour (Ajzen, 1991, p. 196).

Since this variable has been added on top of the originally proposed Theory of Reasoned Action (Ajzen & Fishbein, 1980), it captures those behaviours which are characterised by neither sole behavioural nor normative beliefs, but rather beliefs proclaiming a low degree of volition; the ease or difficulty of performing a particular action (Cordano & Frieze, 2000, p. 628).

Having determined all three components of *behavioural* (attitudes), *normative* (subjective norms) and *controlling* (perceived behavioural control) nature, together they determine behavioural intention, indicating and forming behaviour. Stipulating the presence of effort a person is willing to invest in performing a behaviour, such intentions capture the motivational factors resulting in planned behaviours. The convergence is of the following: As behavioural intention increases, so does an individual's willingness to carry out an action (Cordano & Frieze, 2000, p. 628). A plain visual illustration (*Figure 2*), based on the conceptual model of the TPB and visualised by Barneveld and Silvius (2022, p. 7), encapsulates the formation of behavioural intention based on the combination of the three types of beliefs:

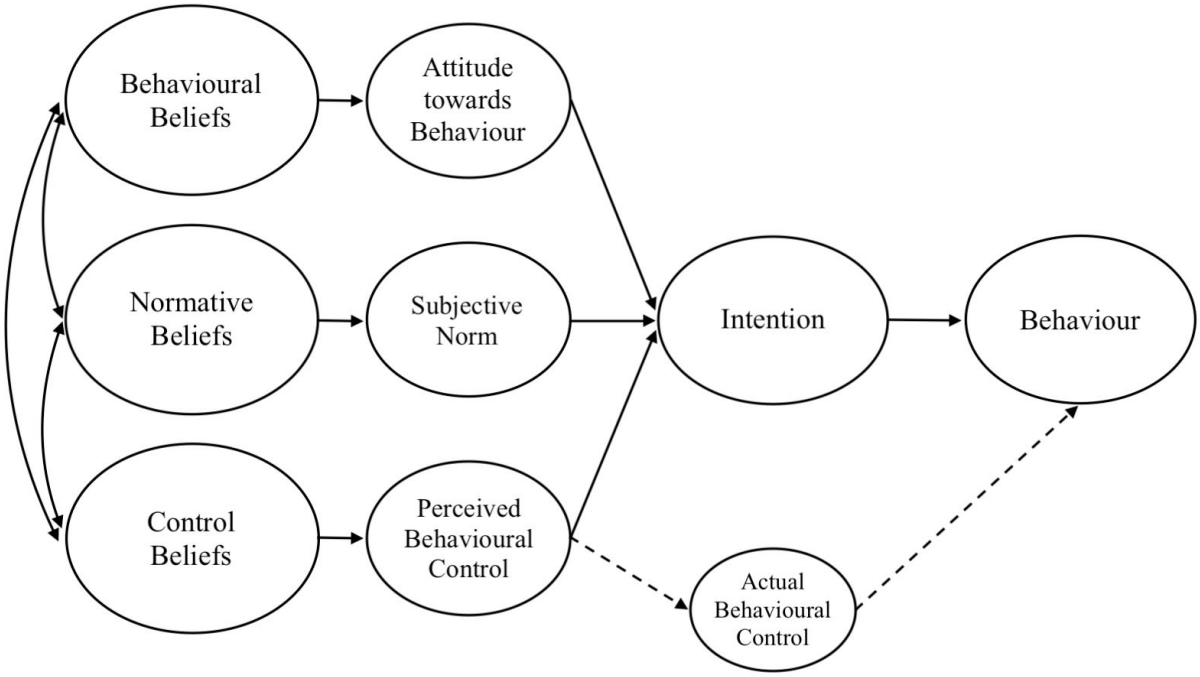

Figure 2: TPB Conceptual Model (Ajzen, 1991, p. 182; Barneveld & Silvius, 2022, p. 7, modified March 2022)

With the TPB serving as the foundation and basic assumption for the categorisation of the statements regarding perceived sustainability barriers faced by project managers, what follows in the ensuing chapters are 45 statements, each of which will be stated in its own category according to the TPB model (behavioural, normative and control) as well as further scrutinised and sub-grouped based on shared principles and aspects. The barriers will appear in an extensive and complete table in *Chapter 3.2.1* Q-Sample.

2.2.3 Criticism of the TPB

Having outlined the TPB's chief key points and justification, the theory has been subject to criticism, so much so by Sniehotta et al. (2014), that Ajzen himself (2015) published a commentary addressing some of the most frequently cited weaknesses of the TPB. As attitudes and preferences are based on behavioural, normative and control beliefs, the model proposes that volitional behaviour of individuals serves as a functional mechanism of intentional performing of a particular behaviour and its corresponding perception, with intention being said to be a mere function of attitudes and norms itself.

With the theory proclaiming that intention constitutes the strongest predictor in regards to variability in behaviour, Sniehotta et al. (2014) beg to differ, citing, among others, Hardeman et al. (2002), who scrutinised 30 papers employing the TPB framework, arriving at several points of conclusion: Firstly, the authors claim that out of all peer-reviewed

publications, only few of them were explicit about the usage of the TPB, with several of them utilising other theories alongside the TPB, such as the *Social Learning/Cognitive Theory*, the *Transtheoretical Model* or the *Elaboration Likelihood Model* (p. 147). The resolution that the TPB is best used when assessing process and outcome variables in order to predict intention or even behaviour change as opposed to develop actual intervention and offering plausible solutions for the maintenance of behavioural change (p. 148) is also shared by Sniehotta et al. (2014, p. 4).

Specifically, this point of criticism has found itself under closer examination regarding the concerns about utility. Whilst the firstly introduced TRA has been found of great usefulness back then, the TPB seemingly lost its utility as it does not offer explanatory hypotheses differing from other prevalent theories. Having said so, the TRA brought new explanatory measures, such as suggesting that actions cannot simply be judged as reflectional attitudes, as well as a new research design. In spite of admitting that the TPB has evolved in the sense that nowadays it serves as an extension regarding self-regulatory behaviour strategies, the accusation goes so far as to claim that empirical evidence is not being properly communicated under said model (Sniehotta et al., 2014, p. 4).

Ajzen, in an attempt to respond to the aforementioned work, specifically addressed this spot by ending on a strong note, indicating that the authors set forth "a profound misunderstanding of the theory itself" and "misinterpret negative findings of poorly conducted studies as evidence against the theory" (Ajzen, 2015, p. 136).

As pointed out numerous times, the TPB shall not be regarded as a stand-along framework for behavioural change, but rather encourages the usage as a foundational framework for designing and adding several more correlational factors. Furthermore, with special emphasis placed on the discreditation of its utility, the theoretical model postulates that changes in beliefs do lead to changes regarding attitudes, subjective norms and perceptions of control, but merely minor ones. Smaller changes can be seen in intentions, with the least shifts in actual behaviour. Henceforth, the TPB advocates an observation of corresponding changes and in turn influencing people's intentions but does not claim to serve as an effective conceptual framework when measuring beyond what it was intended to, such as change intervention, as seen by Sniehotta et al. (2014) and Hardeman et al. (2002) (Ajzen, 2015, pp. 133-134).

Addressing one last censure of the TPB relates to the sufficiency assumption. Ajzen's theoretical groundwork rests on the assumption that exact prediction of intentions and

behaviour is not accurately permitted for, as the three chief beliefs of the theory - behavioural, normative and control - are neither embodied in a rational or unbiased way nor rightfully represent a broad population, but rather stand for individualistic beliefs producing unique attitudes, intentions and behaviours (Ajzen, 2011, p. 1116).

Circling back, the theory indicates predictive performance of behaviour based on intentions, which in turn are predictive from attitudinal behaviours and norms. Whilst an improvement of prediction is not guaranteed when adding other variables than the initially proposed ones due to the earlier mentioned theoretical limitation, a frequent critique of the theory calls for the addition of more predictor variables. Meaning, discrediting the sufficiency of explaining people's intentions and actions on the sole basis of their beliefs. Ajzen, years later after the first publication of the theory, has taken his stance and clarified that "the possibility of adding more predictors was explicitly left open" (Ajzen, 2011, p. 1119) and that the TPB in its essence was established to serve as a ground theory open for further descriptive norms and normative components (p. 1119).

The insufficiency criticism has been elevated by several researchers, a few of which shall be named briefly. Kor and Mullan (2011) examined the topic of sleep hygiene behaviours, arriving at the conclusion that the basic variables of intention and perceived behavioural control do showcase significant relevance, but adding two other predictor variables, namely past behaviour and response inhibition, called for greater variance and stronger predictability (p. 1208).

In a similar manner, Norman and Cooper (2011) not only included past behaviour but also investigated habit construction related to behavioural intention (p. 1159).

Finally, in an attempt to extend the TPB by developing and assessing predictive values of cognitive expected outcomes on intentions, uncertainty avoidance has been added to the prediction equation under the umbrella of researchers Wolff et al. (2011, p. 1143), whilst Hassandra et al. (2011) extended the theory incorporating self-identity and self-concept to predict the intention regarding their questions of research (p. 1241).

As this subchapter evinces, the TPB has made considerable progress since its first introduction and did not fail to address criticism by either substantiating plausible explanations or modifying its original intent. As this thesis is not under the utter commitment of wanting to accurately predict habit formation or background factors leading up to behavioural change but rather identify subjective patterns, this theoretical framework with its straight-forward application allows usage in not only previously health-related investigations,

but also ventures into novel settings, such as sustainability concerns in project management (Ajzen, 2011, p. 1124).

In order to gain an improved understanding of habitual behaviour, the author of this master thesis decides on using this theory as a qualitative fundament but nonetheless analysing the empirically sourced data, after careful deliberation, by only outsourcing the originally proposed components of beliefs, allowing for an investigation outside the theory's usual application and hence excluding the risk of incompatibility by mistakenly adding predictors which have not been empirically explored thus far (Ajzen, 2011, p. 1119).

The key aspects to be discussed further on center around factors influencing sustainable behaviour, drawing on the extensively discussed TPB to lay out the core elements.

2.3 Barriers Influencing Sustainable Behaviour

Crucial to any systematised change of business implications in the approach towards sustainability are the indicative impacts of the professionals caring out the changes themselves, most significantly the willingness of the individuals to determine chief aspects and its sustainable potential (O'Brien et al., 2018, p. 12).

Nonetheless, as concerns for environmentally-friendly practices are enlarging (Álvarez Jaramillo et al., 2019, p. 512; Armenia et al., 2019, p. 1; Bocken & Geradts, 2020, p. 1; de Paiva Duarte, 2015, p. 425; Yuan et al., 2019, p. 1), an array of studies, such as those of Araujo Galvão et al. (2018, p. 80), Geng and Doberstein (2010, p. 232), Ormazabal et al. (2018, p. 158) and Upadhyay et al. (2021, p. 1) point out challenges as well as hindrances companies and its managers have to face upon the implementation of sustainable business practices.

As a starting point, a few general barriers to adoption of sustainable project management actions have been named previously. Personally perceived barriers, being of great importance, are not manifold, although with the publication of Silvius and de Graaf (2019) providing insightful statements. Yet again accounting for the chosen research method, subjectively perceived intentions upon the implementation of sustainability include "opinions of the organisation", "opinion of the project board" as well as "opinion of manager/colleagues". Despite these being fairly positive in nature, the findings will serve to be reformulated into more particular barriers, for instance the sustainable intention of "incorporating sustainability as part of the organisational strategy" might be reframed into "strenuousness of incorporating sustainability as part of the organisational strategy". Others,

such as "increased cost" or "insufficient knowledge/inexperience" shall already serve as suitable statements themselves (Silvius & de Graaf, 2019, p. 1230).

Further barriers to adoption comprise lack of personal awareness, scarceness of exposure to sustainable practices within the working industry, inadequate economic sustainability literacy and the worry of some project managers with regards to the end users' affordability beyond completion in the face of sustainable maintenance (Sinxadi & Awuzie, 2021, p. 5).

Rather despondent subjective barriers have been found by Flores-Hernández et al. (2020): With project managers being opinionated that the market and/or end consumers do not value sustainable business practices enough marks a core subjective barrier, alongside a near or total lack of received training concerning corporate sustainable responsibility as well as not enough support from the public administrative bodies and governments in terms of subsidising and creating awareness (p. 941).

More barriers affecting the implementation by project managers are borrowed from Martens and Carvalho (2017), reframing their focus of subjective importance by project managers into statements of subjective concerns: barriers regarding financial and economic performance, such as profitability, value added and sourcing of materials, barriers regarding personal management practices, including negative impact on employee and stakeholder relations, compensation and lack of incentives and motivation (p. 1095).

As identified by Araujo Galvão et al. (2018), barriers most commonly faced relate to technological, regulatory, financial, economic, performance, customer as well as managerial nature. Although there is striking literary evidence as for the appearance of management barriers according to the authors, having examined 195 peer-reviewed publications, the absence of adequate metrics regarding soft barriers of managerial and social barriers has made it difficult to quantify such hindrances, including the level of information and cooperation perceived by managers as well as commitment to eco-friendly development (pp. 82-83).

Other essential findings by Ormazabal et al. (2018, p. 164) distinguish between hard barriers, such as the lack of financial support, insufficient technical resources as well as information management systems, and human-based barriers, as exemplified by the deficiency of consumer interest in the environment or shortfall in qualified personnel dealing in environmental management. Complementary to this, the chief focus on policy, technology and public participation barriers is also identified by Geng and Doberstein (2010, pp. 234-236) but does not mention any managerial standpoints in particularity.

Rodriguez et al. (2009) list the consciousness of incompatibility with existing business practices as a behavioural barrier as well as "perceived efficacy" of sustainable actions, referring to both adoption of sustainable practices and also the long-term maintenance (p. 9).

Other barriers to eco-friendly attitudes are found by Costache et al. (2021), paying attention to only the hindrances highlighted on an individual level, neglecting institutional and organisational barriers faced. As such, the lack of congruence between individual and organisational values scores high; In addition, the "attitude-behaviour" gap is reflected in the reluctance of changing managers' personal lifestyles, resulting in a non-adoption of sustainable practices in the professional setting, too. Also, the mentioning of the four main behavioural factors shall not be dismissed, them being the lack of understanding, resigned lifestyles, selfishness and perceived associated higher costs and taxes of sustainability integration (p. 5).

With the TPB proposing factors likely influencing the adaptation of environmentally conscious behaviour and business practices, Armel and Danièle (2021) base their findings on the notion that behaviour is being directly influenced by intention and indirectly by an individual's perception. Main barriers therefore include emotional blockage with regards to pro-environmental values, low awareness of sustainability practices in general, impracticality of environmental behaviour leading to discouragement despite good intentions and negative or insufficient feedback about actual sustainable implementation (p. 46).

Lastly, with sustainable actions being most likely adopted when there are only limited personal barriers, a main reoccurring obstacle is said to be the preference of sticking to old, non-sustainable habits rather than implementing new business practices, thus making it difficult or rather inconvenient to transform current actions towards the integration of new, sustainable ones (Manning, 2009, p. 4).

As previously touched upon, the central standpoint of project managers is crucial, given the sustainable practices' complexity and its potential barriers in regard to planning, development, adoption and implementation (Borg et al., 2020, p. 1). The multitude of hindrances goes in accordance with general as well as specific barriers towards sustainable project management, nonetheless the quintessence, namely the variety of perceptions perceived by managers, lacks empirical evidence (Silvius et al., 2021, p. 4).

2.4 Conceptual Framework

To quantify the perceived sustainability barriers by project managers, a conceptual framework is being developed in order to guide the empirical research process henceforth. As there is no existence of a theoretical framework incorporating designated hindrances for adaptation, the construction of this conceptualisation begins by gathering multiple statements of drivers as well as barriers in the light of sustainable project management integration, focusing on project managers' attitudes and insights as opposed to corporate and organisational drivers.

The reason for that being a recent abundance of academic literature on assessing sustainable project management implementation (Clark & Holliday, 2006; Silvius et al., 2012; Zimmerman & Bell, 2015), the listing of general sustainability drivers (Bakos et al., 2020; Lozano, 2015; Lozano & von Haartman, 2018; Sabini & Alderman, 2021; Silvius et al., 2017) as well as specific enablers within particular industries or countries (Caldera et al., 2019; Heyen & Wolff, 2019; Hwang & Tan, 2012). Additionally, recent scholastic publishing has addressed a sole theoretical, qualitative approach, by perusing and categorising project management studies according to a thorough literature analysis (Álvarez Jaramillo et al., 2019; Armenia et al., 2019; Sabini et al., 2019; Silvius, 2019).

With the conceptual framework alongside the a priori established factors of influencing project managers' sustainability intentions by Silvius and de Graaf (2019), behavioural aspects, translated into detailed statements listing personal barriers in the face of sustainable implementation and to be sub-grouped further, serve as the key variables, aiming to examine the qualitatively sourced factors in a quantitative study employing the Q-Methodology. Upon the analysis of elucidated managers' perceptions of barriers, the integration of the Theory of Planned Behaviour (Ajzen, 1991) is being utilised for the assignment of personal barriers into clusters.

The sampling of qualitatively crucial and empirically found statements regarding project managers' perceptions towards sustainable hindrances is done by conducting an extensive literature research as to establish a sturdy backing to gather samples consisting of 45 statements. As current publications show, common, but not only limited to and in no particular order, barriers in the face of project management among different industries include lack of financial incentives, tendency to maintain current practices, availability of methods and tools (Toriola-Coker et al., 2021, p. 5), opinions of the organisation and the project board, reputation, risk for project success (including risk management), right thing to do (Silvius &

de Graaf, 2019, p. 1230), requirement for further training, refusal to commit to increased capital (Borg et al., 2020, p. 8) or the thinking of sustainable unviability at present times (Al-Saleh & Taleb, 2009, p. 50).

Integrating found statements into subgroups based on shared objectives, different subjective patterns of project management respondents by utilising Q-Methodology lead to the finding of patterns. At this stage, it is of uttermost importance to deduce differing divergent patterns as opposed to one shared generalisation, resulting in a visually comprehensible output distinguishing the consensus reached, which justifies the employment of said data analysis procedure (Zabala, 2014, p. 166).

As the present study aims to explicate the perceived barriers between sustainability and behavioural aspects among project management professionals, empirically found results are further to be assigned availing Ajzen's TPB framework, allowing for an addressing and classifying of sustainable barriers on a personal level, thus enriching the scholastic literature by both an academically and professionally relevant context.

Having argued so, the TPB offers the conceptual possibility of exploring the factors influencing the perceived hindrances when addressing sustainability and consequently examining essential constructs of project managers' behavioural intentions (Silvius & de Graaf, 2019, p. 1229).

With this thesis building specifically on the theoretical framework in order to map behavioural factors influencing the adoption of sustainable friendly practices, new insights resulting from the quantitative section will bring upon distinctive barriers faced by project managers, as there is still a great lack on the range of factors affecting perception among the professionals. In spite of certain barriers for general sustainable behaviour have been under the scope of research, the combination of perceived sustainability hindrances among project managers is of novelty.

As this short overview has shown, the hereby constructed conceptual framework (*Figure 3*) shall visually serve as a baseline spanning across the entire thesis. Theoretically sourced inputs will advance this thesis and support presented framework. The compound utilisation of quantitative analysis of the statements as well as the ensuing qualitative content analysis justify the proposal of this conceptual framework:

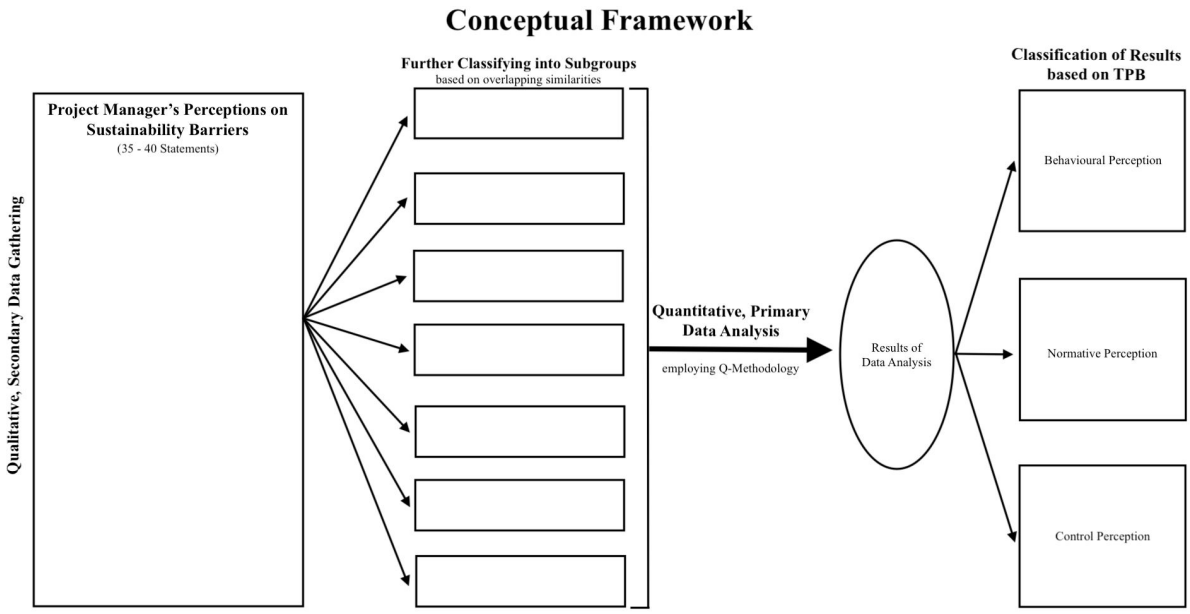

Figure 3: Conceptual Framework (created December 2021)

With its research design being discussed in *Chapter 3* Research Design, the suggested framework may lead to a more precise matrix structure and exhibits a sneak-peak of the subclassified barriers, as displayed in *Figure 4:*

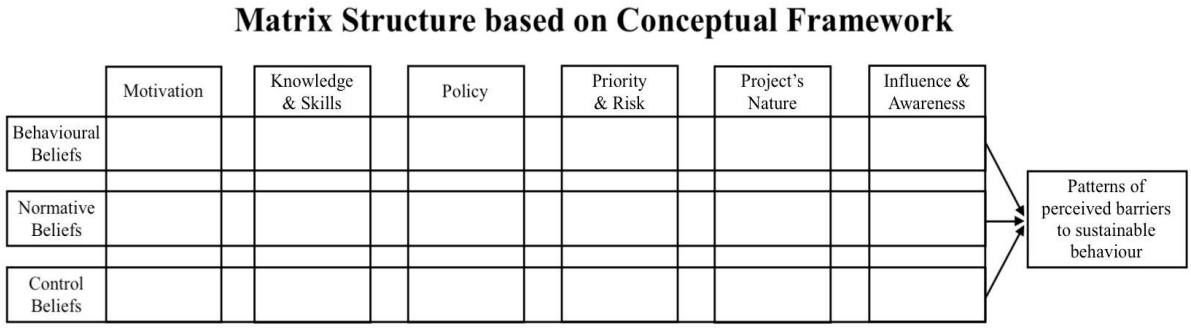

Figure 4: Matrix Structure based on Conceptual Framework (created June 2022)

3 Research Design

This study will address the perceived barriers of project managers in the light of sustainable business practices. An exploratory mixed methods design (embedded design) in the form of Q-Methodology will be used and will involve the collection of qualitative data first and further embedding it into a quantitative research analysis (Cresswell & Plano Clark, 2010, p. 68).

Post-study questions, which are asked during and after the sorting process, contribute to additional in-depth qualitative insights on top of the quantitative outcomes. Transcribing of the oral remarks follows the transcription rules of Kuckartz et al. (2008, pp. 27-28), with the exception that due to the procedure of taking notes by hand and it not being seen as an interview as such, a full word-for-word transcription is not pledged for. Appendix C presents the qualitative findings.

In the first qualitative phase of the study, secondary sourced data will be collected from a multitude of academic literature relating to project managers' sustainability concerns in different industry sectors to describe personal hindrances and barriers affiliated with the topic across different industries.

The second quantitative phase will be conducted as a follow up to the qualitative results. In this exploratory follow-up, the tentative plan is to inspect the different patterns of project managers in accordance with their own subjectivity, after which the analysed data gets re-embedded into an already existing theoretical framework and thus closing the gap between quantitative findings and qualitative impacts benefitting the professional workforce.

With the presentation of the research conduction, the following chapter conveys a more in-depth design of this thesis. *Figure 5* below summarises the previously stated:

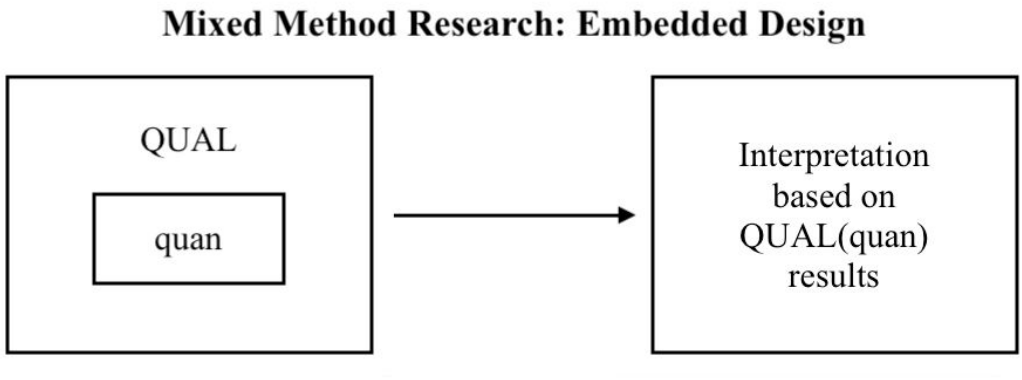

Figure 5: Mixed Methods Research: Embedded Design (Cresswell, J. W., & Plano Clark, V. L., 2010, p. 68, modified December 2021)

Despite a predominant focus on the latter, the initial empirical data collection sets out to collect document-based data from an array of suitable peer-reviewed case findings, considering only highly relevant works of evidently real-life examples and thus allowing for an impactful sampling of the statements. Such an explanatory and descriptive approach using secondary data serves as the fundamental pillar and hence is suitable for the study's intent of perceived personal barriers faced upon the implementation of sustainable practices.

After the initial literature sampling using experimental design principles, concourse statements are based on opinions rather than overall consensus fact statements (Ward, 2009, p. 77). The relation between the statements and project managers' behavioural attitudes towards them considers subgroupings as a controlling variable, with the conceptual framework reaching the stage of quantitative data sampling and analysis. For the empirical validation, the unit of analysis are the pre-sampled and categorised barriers. Selected respondents constitute project managers primarily located in, but not limited to, the Viennese region.

A non-probabilistic sample of 28 respondents is used for two reasons: Firstly, due to the ease of accessing required data and secondly, because purposeful sampling ensures the inclusion of certain viewpoints fulfilling the intention of the research question (Ward, 2009, p. 76). Potential suitors are being contacted directly by the researcher using an established professional network. In addition, LinkedIn (https://linkedin.com) is being employed in order to reach out to business professionals. On top of that, a profound and hand-picked list of suitable and renowned project managers across various locations, provided by this thesis' supervisor, registers additional professionals willing to participate. As current unprecedent times ought to be taken into consideration, data sampling was scheduled and has taken place

in the second half of April 2022 in real life via face-to-face meetings as well as outsourcing the sampling procedure using Microsoft Teams (https://www.microsoft.com/en-us/microsoft-teams/group-chat-software) as the preferred choice of video talk module as well as Miro (https://miro.com), a user-friendly digital whiteboard, allowing several users at once to annotate and contribute to the research procedure simultaneously.

Research data is collected following the Q-Methodology approach. The decision as to exploit such data collection method is ascribable to the ipseity of this thesis' aim: As project managers' preferences, attitudes and opinions are subject to subjectivity, the "Q-Factor Analysis", as it is labelled internationally, outlines subjective structures by identifying different patterns among the respondents which in turn allow for comparison among them, resulting in new findings regarding shared thinking patterns without a sole generalisation (Gabor, 2008, p. 871).

Due to the fact that research following quantitative methodology uses surveys as their choice of instrument, this approach, while providing a generalised overview on sustainable hindrances, does not offer practical inputs for targeted interest groups. Contrastingly, with qualitative studies and semi-structured interviews accordingly, specific project managers' perceptions may be expounded on, yet wide-reaching applicability is not provided for. Thus, by employing Q-Methodology, an adjacent factor analysis will enable the finding of different subjective patterns of perceived barriers applicable to project managers hailing from similar as well as dissimilar industries (Coogan & Herrington, 2011, p. 24).

With Q-Methodology availing itself of both qualitative and quantitative analysis composed of the Q Sort and Q Factor Analysis, according to Ward, it has been "the most effective approach for [...] analysing aspects of experience, including attitudes and perceptions" (2009, p. 75).

The mixed method design of this thesis is classified as an embedded cross-sectional design. Such one data set (qualitative) serves as a supportive role for the other (quantitative) at a given point in time. The first phase, constituting sampling and subgrouping of empirically sourced statements as a single data set, is considered to be insufficient to draw up impactful conclusions. Therefore, the inclusion of a quantitative data analysis in order to answer the research question necessitates an embedding of qualitative components within a quantitative design (Cresswell & Plano Clark, 2010, p. 67).

Furthermore, the appropriation of the Q-Factor Analysis, by "employing a by-person factor analysis in order to identify groups of participants who make sense of a pool of items in

comparable ways" (Watts & Stenner, 2005, p. 68), the presenting of the pre-sampled statements (Q-Sampling), thereafter our Q-Set, is broadly representative and hence can be applied to all respondents alike. With the sampling task itself being fairly self-explanatory, respondents will be asked to rank (Q-Sort) the statements based on a continuous scale, reaching from *strongly agree/relate* to *strongly disagree/cannot relate* (Gabor, 2013, p. 117).

Nonetheless, the decision as to why justifying the research question by utilising Q-Methodology as the underlying research method is of the following:

Firstly, Q-Statements can be sampled using an unstructured method, implying that such statements may come up according to the author's liking, ensuring consistency with the research question and reasonableness without consolidating word-for-word secondary data. A drawback of this approach, nonetheless, is the potential under- or over-sampling of certain topical aspects, which are considered negligible to the subgroupings following the statement collection (du Plessis, 2005, p. 145).

Additionally, Q-Statements differ from survey questions in the sense that they should purposely be formulated in a short and "stand-alone" mannerism, allowing for a subjective interpretation by everyone. Therefore, the importance of the statements is not in the nature of the phrasing itself, but in the concourse of revealing an array of subjective patterns by project managers due to individual interpretations (Webler et al., 2009, p. 10).

Further, this research design does not result in a generalisation of predominant attitudes towards barriers in the general population, but rather of a particular perspective of real-life project managers and shall thus be treated as an inferential statistics procedure (du Plessis, 2005, p. 151). A forced-choice condition of instruction (p. 154) urges the respondents to place all of the statements on a physical Q-Sort diagram, allowing for the likelihood of all present barriers to be assigned by every respondent.

The final step of Q-Methodology marks the utilisation of the factor analysis by Kline (1994) and correlation, uncovering the underlying structure of the large variables sampled via an "orderly simplification" (du Plessis, 2005, p. 160). Concluding in an assessment and interpretation of the findings, the statistical software programme PQMethod© gives authorisation to find and interpret the findings.

As pictured in *Figure 3*, the final step of the empirical work is assessing the degree of the right fit of found results according to the three pillars of the Theory of Planned Behaviour (Ajzen, 1991) and the statements' subclassifications, allowing for a clear finding of distinctive subjective patterns.

Silvius and de Graaf (2019, p. 1228) argue that, with "TPB [being] a popular way to examine underlying constructs of behaviour", the theory is found to be fitting with regards to the application of professional project managers' sustainable preferences and perceptions. Through the identification of perceived barriers influencing business professionals' sustainability approaches, allocating them to differing subjective patterns will contribute to a more profound and practical comprehension and thus guarantee this thesis to provide contribution to the "soft side", a terminology established yet again by Silvius and de Graaf (2019, p. 1226), of sustainability in the face of project management.

3.1 Introduction & Justification of Q-Methodology

With its development in the year 1955 by William Stephenson (Stephenson, 1955), the origins of Q-Methodology trace back to the field of psychology and social sciences. As this particular modus operandi captures the subjectivity of people, Barneveld and Silvius (2022) argue that it "has shown its usefulness in the context of project management research" (p. 8), referring to other works such as "Integrating Sustainability into Major Infrastructure Projects: Four Perspectives on Sustainable Tunnel Development" (Gijzel et al., 2020), taking into consideration subjective viewpoints obtained by practitioners with a special focus on energy, resilience, social and transition (p. 1); "Assessing Sustainability Perspectives in Rural Innovation Projects Using Q-Methodology" by Hermans et al. (2012), drawing attention the elicitation of participants' individual frames of references of a Dutch innovation programme, resulting in, yet again, four distinctive patterns, ranging from highly progressive to uttermost conservative (p. 84); And the application of Q-Methodology with regards to project practitioners' perspectives on the quintessence of collaboration in engineering and construction projects, suggesting four distinctions in terms of subjective standpoints towards work relations (Suprapto et al., 2015, p. 664).

Understanding human perspectives in an array of contexts, such as sustainability implementations in project management, this methodology might help overcome conflicts and aid in assisting the development of projects by fostering better comprehension. Thus, with Q-Methodology being unique in the sense that it encapsulates both quantitative and qualitative techniques, it has been applied in research multiple times since its introduction, as exemplified above (Zabala et al., 2018, p. 1185).

As this thesis carries the term "subjectivity" in its heading as well, Q-Methodology takes a view about the state of mind of its participants, thus evoking different subjective

patterns. Defining subjectivity itself, McKeown and Thomas (2013) refer to an individual's "internal frame of reference" (p. 2), casted through either experience or personal beliefs, guiding one's very own behaviour and decision making. Functioning as a semiquantitative and exploratory method, Q-Methodology thus satisfactorily yields a clear and systematic way to bring forward subjective views (Zabala et al., 2018, p. 1186) by clustering said subjective viewpoints based on value positions, uncovering diverse viewpoints without any regards to whether they are frequent in a population or not (Watts & Stenner, 2005, p. 69).

Finally, as sustainability in current times signifies a multi-dimensional concept lacking a clear comprehension of how its real-life integration is done by project managers, the explorative nature of Q-Methodology allows for an identification of different perspectives of project managers beyond the ordinary triple constraint considerations deliberating on merely time, cost and scope (Silvius et al., 2017, p. 1140).

Through the combination of qualitative as well as quantitative research procedures, this methodology allows for a simultaneous investigation of subjective issues determining participants' perceptions and forecasting their likelihood of taking action (Cross, 2005, p. 208). The following subchapters are concerned with the chief elements of said procedure.

3.2 Components of Q-Methodology

Marking the basis of Q-Methodology, the *Q-Sort Technique* as well as the adjacent *Q-Factor Analysis* constitute the core pillars, with the sorting process functioning as a vehicle for the sole purpose of collecting the data which, thereafter, is getting assessed using the factor analysis (Ward, 2009, p. 75).

3.2.1 Q-Sample

Comprising five steps, the first course of action construes the concourse and also establishes the prime set of aspects in accordance with the topic in question (Gijzel et al., 2020, p. 4). The sampling procedure brings forward the *Q-Sample* (*Q-Set*), comprising fairly heterogeneous items of the same topic of interest which the participants are asked to sort. It is true that, with Q-Methodology being of exploratory nature, the Q-Set must be critically aligned to the research questions as it dictates the formulation of the statements. Due to the premise that the Q-Set serves as an enabler allowing the respondents to answer the research question effectively, all statements of a Q-Set *must* represent potential replies to the subject matter (Watts & Stenner, 2005, p. 75).

Whilst there is no intelligible guideline on how many statements should be included in the Q-Set, indications and proposals range anywhere between 30 and 100 (McKeown & Thomas, 2013, p. 63) and gradually decrease down to 40 to 80 (Watts & Stenner, 2005, p. 75) or even five to 70 statements, as recommended by Schlinger (1969, p. 54).

Aiming at a proper representation encapsulating main viewpoints and opinions in regard to a specific topic, Schlinger further goes on as to propose that a representative Q-Set shall not necessarily overwhelm and exhaust its respondents (p. 54). Watts and Stenner (2005, p. 75) elaborate more on the amount of statements, acknowledging the fact that a Q-Set - theoretically speaking - will always be subject to the extent of the matter itself, and thus might comprise an infinite number of statements; However, a representative set contains merely a "condensation of information" (p. 75). Thus it does not postulate uttermost completeness, as the main focus of Q-Methodology deals with the relative likes, dislikes and interpretations, meaning the respondents' engagement with the Q-Set, not the actual statements themselves (Watts & Stenner, 2005, p. 76).

In practice, the Q-Set allows for the elicitation of statements from multiple sources, such as in reference to secondary data obtained through academic literature, formal interviews and informal discussions, pilot studies or even ready-made Q-Sets available for personal usage (Watts & Stenner, 2005, p. 75).

As the selected statements ought to be both diverse and comprehensive, therefore encase an almost complete range of points of views which different project managers might have, evidence from multiple peer-reviewed journal articles has been the sole source of the barriers concerning this study. The hindrances have been selected with careful attention to the three kinds of beliefs, namely behavioural, normative and control, and further subdivisioned corresponding to *Knowledge & Skills*, *Motivation*, *Policy*, *Priority & Risk*, *Project's Nature* and *Influence & Awareness*, enclosing a broad range of potential classifications.

The result produced an overwhelming sample of 87 statements, with over one third (count: 36) of them belonging the category of behaviour, followed by 27 normative and 24 control statements. As this concourse is admittedly too large to let participants react to and cope with, a smaller Q-Set is deemed as being more appropriate, forcing the author of this thesis to narrow it down to 45 statements as a result.

To bring upon practicality, a few statements shall already be presented in the upcoming paragraphs as well as set under the premise of the conceptual model (*Figure 3*), as to increase awareness and better grasp the fundamentals of what this master thesis seeks to

contribute to the relevancy of real-life sustainable project management barriers. Furthermore, the categorisations and subgroupings (*Table 1, Table 2* and *Table* 3) help to clarify the particularities and shared commonalities of the barriers themselves. Despite the types of barriers' original naming, which is done by the author of this thesis, the ideation of doing so stems from both the works of Vermunt et al. (2019, p. 893) and Silvius et al. (2021, p. 5).

The first category, *Behavioural Beliefs*, encapsulates 15 statements in total, out of which all of them, apart from *Sustainability does not stimulate me* (Statement #1), start off with an "I" statement. This is caused by the simple notion of individuals' own behavioural beliefs producing certain attitudes towards overall behaviour (*I believe, that ...*) (Marnewick et al., 2019, p. 4).

The behavioural belief category with its statements is further subcategorised into the following subclassifications: Priority & Risk (five statements out of 15, 33.33%), Motivation (four statements; 26.67%), Project's Nature (two statements, 13.33%), Influence & Awareness (two statements, 13.33%), Knowledge & Skills (one statement, 6.67%) and Policy (one statement, 6.67%).

A typical example from the section *Behaviour:Project's Nature* would be *I believe that sustainable project management is only aimed at large(r), impactful projects* (Statement #12), whereas the grouping of *Behaviour:Priority & Risk* includes *I think that sustainability increases the risk and uncertainty in the project* (Statement #8), among others.

Secondly, *Normative Beliefs* also contribute to one third of the overall 45 statements, with 15 statements further classified into the same groupings as mentioned above minus Knowledge & Skills.

As displayed in *Table 1*, the largest proportion within this category is represented by Influence & Awareness (five out of 15 statements, 33.33%), followed by Priority & Risk (three statements, 20%) and Motivation (three statements, 20%), ending with Policy (two statements, 13.33%) and Project's Nature (two statements, 13.33%).

Whilst arguably normative beliefs refer to external and social pressures alongside expectations (Marnewick et al., 2019, p. 4), the classification of *Influence & Awareness* features five differing statements wholly enclosing the normative frame of reference. Examples from *Normative:Influence & Awareness* include *The market does not value sustainable project management practices* (Statement #30) and *Stakeholders are not interested in sustainability* (Statement #27).

Finally, the third category, *Control Beliefs,* consists of 15 statements likewise. Typically, being about knowledge and/or application and success, this category features all subclassifications besides "Motivation": Knowledge & Skills (five out of 15 statements, 33.33%), Project's Nature (four statements, 26.67%), Policy (four statements, 26.67%), Priority & Risk (one statement, 6.67%) and Influence & Awareness (one statement, 6.67%).

To exemplify *Control:Knowledge & Skills,* one representative statement expounds *Sustainability is too complex and not practical enough to apply in the project* (Statement #31), whereas an indicative statement in the section of *Control:Policy* is *Regulations hinder the adoption of sustainable project managements in my project* (Statement #38).

# of Statements	Category of Beliefs	Subclassification	% within this Category
15	Behavioural	Priority & Risk	33.33%
		Motivation	26.67%
		Project's Nature	13.33%
		Influence & Awareness	13.33%
		Knowledge & Skills	6.67%
		Policy	6.67%
15	Normative	Influence & Awareness	33.33%
		Priority & Risk	20.00%
		Motivation	20.00%
		Policy	13.33%
		Project's Nature	13.33%
15	Control	Knowledge & Skills	33.33%
		Project's Nature	26.67%
		Policy	26.67%
		Priority & Risk	6.67%
		Influence & Awareness	6.67%

Table 1: Q-Set Statement Allocation

Labels	Count of Category
Behaviour	15
Normative	15
Control	15
Total	45

Table 2: Q-Set Labels with Count of Categories

Labels	Count of Subclassification
Motivation	7
Knowledge & Skills	6
Policy	7
Priority & Risk	9
Project's Nature	8
Influence & Awareness	8
Total	45

Table 3: Q-Set Labels with Count of Subclassifications

Still, as argued by Ward (2009) hinting at the works of Brown (1993), the more statements included in the final Q-Set, the higher the likelihood of the participants' aptitude to express personally felt attitudes (p. 78). To decide whether to include or exclude certain statements from a concourse, there are two ways of doing so, both of which shall be touched upon briefly.

Unstructured Q-Samples refer to the inclusion of statements which are presumed to be relevant to the subject matter. They get chosen without immoderate effort, not necessarily based on previously conducted research or secondary data. Whilst an unstructured Q-Set bestows accurate positions on the topic, by not taking into consideration theoretical frameworks or topical categories, certain angles might be at risk for over- or undersampling, causing an unintentional bias in the finalised Q-Sample (du Plessis, 2005, p. 140).

Structured Q-Samples, the method which has been chosen for this thesis, is subject to a clear timeline of gathering statements from primary and/or secondary sources. They are then organised, analysed and presented in a thorough manner. Being compelled to group the accumulated statements into theoretical classifications, the systematic composition allows for a full coverage of different aspects and thus guaranteeing an even representativeness. Additionally, structuring the sourced statements gives way to a transparent conciseness and placing boundaries on the topic (du Plessis, 2005, pp. 145-146) whilst ensuring that statements are selected purposefully according to pre-selected categories of another theoretical framework (p. 149).

Resultingly, *Table 4* lists the outcome of the Q-Sampling procedure, showcasing 45 statements of three main categories and six further classifications:

Barriers to Sustainability Identified in Literature

Statement #	Category	Sub-classification	Statements (Identified Barriers)	References
1	Behaviour	Motivation	Sustainability does not stimulate me	Barneveld & Silvius, 2022, p. 11
2	Behaviour	Motivation	I do not feel motivated to address the topic of sustainability	Kok et. al., 2017, p. 1511 & Marnewick et. al, 2019, p. 4
3	Behaviour	Motivation	I do not experience a moral or ethical obligation to do so	Lozano & Haartman, 2018, p. 514
4	Behaviour	Motivation	I perceive implementing sustainability in projects as inconvenient	Barneveld & Silvius, 2022, p. 11
5	Behaviour	Knowledge & Skills	I feel overwhelmed by the complexity of the sustainable PM practices	Jaramillo et. al., 2018, p. 519
6	Behaviour	Policy	I am not aware of any sustainability related legislation for my project	Kok et. al., 2017, p. 1511
7	Behaviour	Priority & Risk	I am not aware of any environmental risks or impact of my project	Hwang & Tan, 2012, p. 337
8	Behaviour	Priority & Risk	I think that sustainability increases the risk and uncertainty in the project	Bocken & Geradts, 2020, p. 7
9	Behaviour	Priority & Risk	I favour traditional PM over new, sustainable practices	Armenia et. al., 2019, p. 11 & Bocken & Geradts, 2020, p. 7
10	Behaviour	Priority & Risk	I regard sustainable PM practices as low priority	Toriola-Coker et. al., 2021, p. 8 & Armenia et. al., 2019, p. 10
11	Behaviour	Priority & Risk	I am satisfied with the current PM practices in my project	McLean & Borén, 2014, p. 1499 & Chwialkowska & Flicinska-Turkiewicz, 2020, p. 206
12	Behaviour	Project's Nature	I believe that sustainable PM is only aimed at large(r), impactful projects	Jaramillo et. al., 2018, p. 521 & Silvius et. al., 2017, p. 1141
13	Behaviour	Project's Nature	I believe that for the types of projects I manage, considering sustainability unnecessarily increases the cost	Yuan et. al. 2019, p. 8 & Barneveld & Silvius, 2022, p. 11
14	Behaviour	Influence & Awareness	I do not see a connection between the project's objectives and sustainability	Skordoulis et. al., 2020, p. 410
15	Behaviour	Influence & Awareness	I do not feel responsible for the sustainability of my projects	Costache et. al., 2021, p. 5
16	Normative	Motivation	My project owner or client is not giving me additional incentives / compensation for the extra effort of sustainable practices	Borg et. al., 2020, p. 8
17	Normative	Motivation	Addressing sustainability will not give me a better status as a project manager	Barneveld & Silvius, 2022, p. 11
18	Normative	Motivation	The project team prefers to stick to already-established PM routines	de Jesus & Mendonça, 2018, p. 78

19	Normative	Policy	I believe it is the project owner's or client's responsibility to drive sustainability	Costache et. al., 2021, p. 7
20	Normative	Policy	My company does not adopt environmentally-friendly PM practices	Al Ali et. al., 2019, p. 93
21	Normative	Priority & Risk	Sustainability is not the project's performance priority	Jaramillo et. al., 2018, p. 518
22	Normative	Priority & Risk	Implementing sustainability practices may hurt my relationship with the project owner / client	Silvius & de Graaf, 2018, p. 1230
23	Normative	Priority & Risk	When integrating sustainable PM practices, my reputation as a project manager could be at risk	Silvius & de Graaf, 2018, p. 1230
24	Normative	Project's Nature	According to the project owner / client, sustainability is not relevant for this project	Jaramillo et. al., 2018, p. 520
25	Normative	Project's Nature	Company procedures limit the consideration of sustainability in the project	Toljaga-Nikolić, 2020, p. 8
26	Normative	Influence & Awareness	Endusers are not interested in sustainability	Sinxadi & Awuzie, 2019, p. 5
27	Normative	Influence & Awareness	Stakeholders are not interested in sustainability	Costache et. al., 2021, p. 5
28	Normative	Influence & Awareness	I expect to be confronted with negative reactions or feedback about the sustainable PM practices	Anaba & Anaba, 2021, p. 46
29	Normative	Influence & Awareness	I feel there is a lack of interest amongst project team members	Hwang & Tan, 2012, p. 442
30	Normative	Influence & Awareness	The market does not value sustainable project management practices	Flores-Hernández et. al., 2019, p. 941
31	Control	Knowledge & Skills	Sustainability is too complex and not practical enough to apply in the project	Anaba & Anaba, 2021, p. 46
32	Control	Knowledge & Skills	Methods for sustainable PM practices are missing	Toriola-Coker et. al., 2021, p. 8
33	Control	Knowledge & Skills	The project team lacks the knowledge to understand how sustainability can be implemented in the project	Toriola-Coker et. al., 2021, p. 4
34	Control	Knowledge & Skills	The team does not have the competences to integrate sustainability in the project	Toriola-Coker et. al., 2021, p. 4
35	Control	Knowledge & Skills	I do not experience with sustainable PM practices	Opoku et. al., 2019, 294
36	Control	Policy	For my projects, no clear environmental issues or impacts have been identified	Auraujo Galvão et. al., 2018, p. 83
37	Control	Policy	I do not have the methods or practices of sustainable PM	Toriola-Coker et. al., 2021, p. 9
38	Control	Policy	Regulations hinder the adoption of sustainable PM practices in my project	Al-Saleh & Taleb, 2009, p. 54
39	Control	Policy	I believe that sustainability is difficult to integrate in the project	Martens & Carvalho, 2016, p. 1099
40	Control	Priority & Risk	Considering sustainability does not make my projects more successful	Martens & Carvalho, 2016, p. 1095

41	Control	Project's Nature	I do not believe that sustainability can be addressed by all project managers in every project	Marnewick et. al, 2019, pp. 4-6
42	Control	Project's Nature	It is too difficult to align the project with sustainability goals or objectives	Dadzie et. al., 2018, p. 10
43	Control	Project's Nature	My project is not suitable for green project management practices	Toriola-Coker et. al., 2021, p. 8
44	Control	Project's Nature	I believe my project is too small to reap the benefits of implementing sustainability	Bakos et. al., 2019, p. 1291
45	Control	Influence & Awareness	A proactive involvement and engagement of stakeholders requires too much effort	Armenia et. al., 2019, p. 10

Table 4: Q-Set Statements

3.2.2 P-Set

After deciding on a final Q-Set, Q-Methodology next seeks individuals closely tied to the research topic; Participants of such important exposure are termed as *P-Set* (Gijzel et al., 2020, p. 4).

Contrastingly to quantitative research, the quality of the outcomes of Q-Methodology does not depend on a large sample of participants but more on the scope of perspectives captured in the P-Set (Hermans et al., 2012, p. 76). Consequently, with this methodology being unsuitable to reach a census in a population, the purposeful selection of individuals ensures the inclusion of certain viewpoints essential for answering the research question and on that account does not requisite an extensive P-Set (Ward, 2009, p. 76).

People involved in the discourse (Q-Statements:Q-Participants) are recommended to make up a ratio of 3:1 or 2:1, or one person per three to five statements (Danielson et al., 2010, p. 93), whereas Brown argues that "samples of persons (P-Sets) rarely exceed 50" (Brown, 1993, p. 104) and the sample is not obliged to exceed the number of 40 respondents (p. 104).

As the nature of this study exclusively takes into consideration the perspectives of project managers and programme managers, a total number of 28 participants working in the field of project management is included in the P-Set. Before the actual Q-Sorting process, the business professionals are asked to fill out a "Participant Information Form" (Appendix A), which has been drafted by the author of this thesis prior. The diversity and profiles of the participating project managers are presented adjacent.

Description of the P-Set			
Question	**Answer Categories**	**Total Sample**	
		Frequency	**Percentage**
Age	18 - 27	9	32.14%
	28 - 37	10	35.71%
	38 - 47	8	28.57%
	48 - 57	1	3.57%
	58 - 67	0	0.00%
	68+	0	0.00%
Gender	Male	14	50%
	Female	14	50%
	Other	0	0%
	Prefer not to reveal	0	0%
Project Type (multiple answers allowed)	Building & Construction Public Infrastructure	3	6.38%
	Building & Construction Real Estate	8	17.02%
	Building & Construction Development	2	4.26%
	Organisational Change	7	14.89%
	Information Technology	12	25.53%
	Research & Development	7	14.89%
	Other	8	17.02%
	Others:	Procurement, Development of Activities, Education Programme, IFRS 17 (Insurance), Manufacturing, Healthcare, Literature Content, Medical Technology	
Industry Type (multiple answers allowed)	Agriculture	1	1.54%
	Energy	3	4.62%
	Healthcare	5	7.69%
	Logistics Services	2	3.08%
	Facility & Real Estate	5	7.69%
	HR Services	1	1.54%
	Consulting	5	7.69%
	Education & Training	2	3.08%
	Industry	7	10.77%
	Building & Construction	8	12.31%

	Wholesale & Retail	3	4.62%
	Financial Services	5	7.69%
	Legal Services	1	1.54%
	ICT & Communication	7	10.77%
	Public Administration	3	4.62%
	Other	7	10.77%
	Others:	Insurance, Manufacturing, Research & Technology, Electrical & Electronics, Media, Social Sector, Sports Betting	
Years of Experience in Project Management	1 - 5	16	57.14%
	5 - 10	5	17.86%
	10 - 20	6	21.43%
	20+	1	3.57%
Project Size	< 1 Mio €	9	32.14%
	1 - 10 Mio €	10	35.71%
	> 10 Mio €	9	32.14%
Sustainability integrated in Company Strategy (*1 - not at all, 5 - to the full extent*)	1	1	3.57%
	2	6	21.43%
	3	12	42.86%
	4	7	25.00%
	5	2	7.14%

Table 5: Description of the P-Set

3.2.3 Q-Sort

Following the selection of participants fitting the necessary criteria, the empirical section of the Q-Methodology, *Q-Sort*, is being carried out. As with any other primary data collection, this method allows for evidence gathering in-person as well as online, permitting a high degree of flexibility for both the author of this thesis as well as its respondents (Gijzel et al., 2020, p. 7).

Prior to the actual sorting process, an appropriate response format is being decided upon, referring to the labels of the ranking dimensions. Since the participants' point of view is of ultimate interest, the response format alludes to the names of the ranking dimensions, such as whether certain statements are agreeable, acceptable or sympathised with. As the prime reason for employing Q-Methodology is to disclose the subjective patterns of perceived

project management sustainability barriers, the chosen subjective area of interest marks *agreement*, hence the appointed project managers rank the pre-fixed statements using a continuum ranging from *most disagree* on the left to *most agree* on the right-hand side.

Emphasised is further the width of the rating scale, typically ranging from -3 to +3, -4 to +4 or -5 to +5. As this strongly depends on the selected number of statements incorporated in the Q-Set as well as the notion that heavily disagreeing feelings can be as strong as positive ones, the range of this paper's agreement-scale spans from -5 (*strongly disagree*) to +5 (*strongly agree*), allowing for a more concise analysation thereafter (du Plessis, 2005, p. 153).

The outcome of a fitting response format for the already established Q-Set is the sorting process itself, which asks each of the participants to rank-order all of the 45 statements (Suprapto et al., 2015, p. 668), either printed out for the in-person version or digitally, using the digital whiteboard https://miro.com on an ordinal scale.

Whilst placing the statements on the grid, the participants are encouraged to keep the guiding umbrella question of "*As a project manager, I do not adopt sustainable project management practices, because ...*" in mind. The statements must be force-sorted in relation to each other and placed on a normal distribution template, as shown in *Figure 6* below.

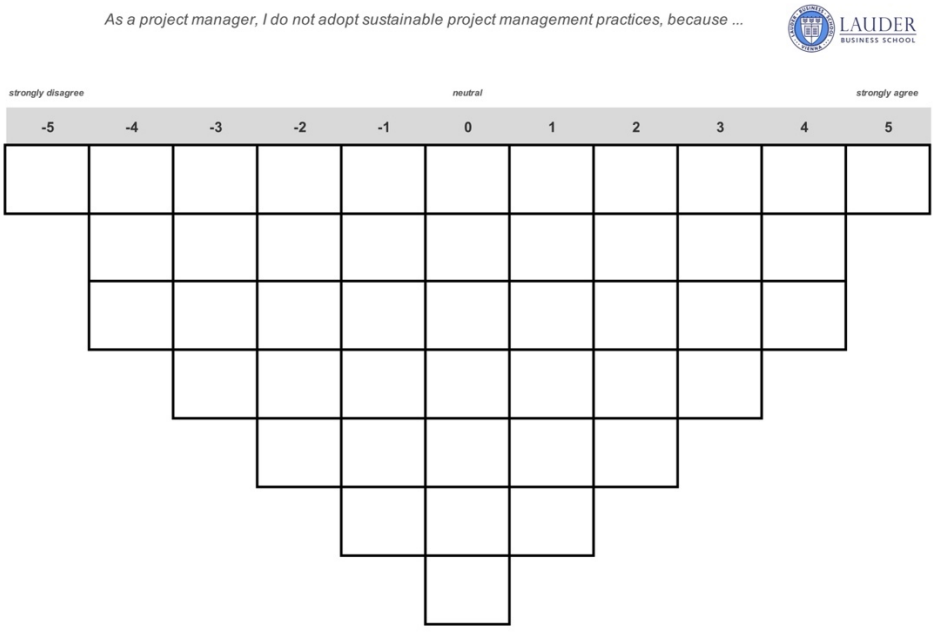

Figure 6: Q-Sorting Grid

Common to this methodology, the grid urges the respondents to choose their picks intuitively on a fixed distribution (Hermans et al., 2012, p. 78), differentiating between the least number of statements in the most extreme categories as to elucidate the utterances which characterise the project managers the most.

As identified earlier, the foundation of the Q-Set and in turn Q-Sort is of exploratory nature, allowing for a categorisation of the individuals themselves solely on the grounds of the statement configurations. Although free to choose, the constraints of the fixed distribution have to be obeyed. This conviction contributes to the consequent sorting process itself, which signals the freedom of choice but ultimately offers a guiding hand by merely having to sort, rank and place the statements on blank rectangles available to them (Watts & Stenner, 2005, p. 80).

Another essential point relates to the initial sense of feeling overwhelmed when being presented with arguably various statements about one and the same topic. In an effort to counteract this feeling of profuse anticipation, the way of handling the initial phase of the sorting process borrows from the work of Barneveld and Silvius (2022) by firstly encouraging the respondents to carefully read through all of the statements before placing them on the grid as to grasp a sense of gravity about each of the statements.

Next, they are being advised to generate three piles of statements based on an inceptive and vague "gut feeling", stretching from *I strongly relate to this statement* (+5) over *I feel indifferent as of now* (0) to *I neither agree nor relate to this statement* (-5). Having done so, the sorting process thereafter will become somewhat less straining and demanding (p. 10).

By allocating the statements to the grid, the respondents are being instructed to move the aspects according to their own proper level of agreement. Merely the horizontal location has an impact on the agreeableness, the vertical placement in any of the columns of the sorting scheme is of no interest (Gijzel et al., 2020, p. 7).

As a matter of fact, all participants are made aware that, once a statement has been given its designated place, it is not fixed for eternity but rather can be moved around freely until the very last statement has been placed on the normal distribution.

Nonetheless, a *forced-choice condition of instruction* is being applied. Such method of instruction presents the utilisation of the normal distribution, namely a Q-Sort diagram. Commencing with the initial sorting of the statements into three pillars, the grid ensures that all the statements will be distributed evenly according to the shape of a normal distribution.

Complementary to this sorting process in question is the *free-sort condition of instruction*, which does not encompass a pre-determined sorting grid but rather allows the respondents to freely sort as many or as little of their statements on any of the rating markers. Under this condition, the freedom of choice comes at the price of less stable barrier sorting, as respondents are presumed paying less attention to the statements since they are allowed to

place them virtually anywhere (du Plessis, 2005, pp. 154-159); For instance, one respondent might place all of his or her statements under the distribution marker of *strongly disagree* (-5), whereas another might feel *indifferent* (0) about all of the statements.

During the entirety of the Q-Sort, project managers are encouraged to share their thoughts and feelings about the statements with the author of this thesis, bestowing a small contribution in terms of contextual information for the further analysis of the results (Barneveld & Silvius, 2022, p. 10). Finally, a photograph is taken of the finalised Q-Sort and its allocated and ranked statements, which is then due for further data processing.

Ensuing the sorting procedure, the project managers are being briefly interviewed surmising relevancy for supporting the qualitative interpretation of the respondents' ranking of sustainability barriers (Suprapto et al., 2015, p. 668).

The main question of interest directed at the project managers establishes a link between the assigning of certain statements on the most extreme values (-5 and +5) and the participants' motivation to do so. The information brought upon by asking why those particular barriers have been placed on *strongly disagree* and *strongly agree* is crucial for the proceeding findings and interpretation of the different subjective patterns emerging from the analysis (Barneveld & Silvius, 2022, p. 10).

As a final question, project managers are asked whether they feel that certain barriers, which they came to think of during the sorting process, have not been presented to them as an option or which barriers they would have liked to be incorporated in the Q-Set. In essence, these insights allow for an adaption of the statements when used in further research.

Concludingly, the short interview asks whether there are any closing remarks from the project managers' side. In Appendix B, an overview of the post-study questions asked during and after the sorting process, contributing to deeper qualitative insights on top of the quantitative outcomes, is being presented for the reader of this thesis.

3.2.4 Q-Factor Analysis

Following the completion of the Q-Sorting process, adjacent is the factor analysis. The fourth stage marks the entering of the data obtained through Q-Sort into PQMethod©, a statistical software programme empowering researchers to analyse the results gained from the previous sorting procedure by scouting out inter-correlations among the differing barriers and specifically designed for Q (Ramlo, 2015, p 77). The key aspect of factor analysis is the reduction of various differing personal views, namely the ranking of the statements done by

28 project managers hailing from contrasting industries, down to a few but impactful patterns, which in turn represent a mathematical description of shared perspectives (Gijzel et al., 2020, p. 8).

Computing intercorrelations among Q-Sorts, followed by a factor analysis using the *Centroid Component Method*, the factors are then rotated by hand using two-dimensional plots (Schmolck, 2014, p. 1).

It shall be noted that factor analysis per se, as proposed by Kline (1994, p. 1), constitutes a method of simplifying complex data in an orderly way. To put it differently: Factor analysis, employing PQMethod©, "uncovers the latent structure of a set of variables" (du Plessis, 2005, p. 160) by ascribing a larger set of variables to a smaller amount of factors. Hence, if the analysis proves that a group of variables shows a great deal of similarity, it can be concluded that a common factor exists (p. 160).

With the factors resulting from the Q-study representing factual operations and ways of behaving of project managers shaping their attitudes, the dismantled factors are, as a result, factors of behaviour. Consequently, the revealed subjective patterns (factors) are representative of genuine factor-categories, in sharp contrast to the initially assigned ad hoc categories, therefore reflecting unfeigned attitudinal subdivisions (Ward, 2009, p. 78).

Through the extraction and rotation of the components of project managers' perspectives, each resulting factor leads to the computation of Z-Scores based on the Q-Sort scores obtained throughout the sorting process (Suprapto et al., 2015, p. 668).

By correlating individual perspectives, an indication between similar viewpoints brings forward subjective segments. Complementary to this, the correlation of people as opposed to tests, assessing individuals' particular likes and dislikes, agreements and disagreements, the factor analysis supplies us with not only similarities but also differences regarding the ways of thinking of participating respondents. Hence, it allows for reporting on perspectives from project managers by drawing the attention to the factorisation of clusters of correlation, which in turn are given the account of subjective patterns (Silvius et al., 2017, p. 1140).

To summarise, Q-Factor Analysis factors correlations rather than variables between people, thus dictating what kind of sets or viewpoints participants cluster together (du Plessis, 2005, p. 161).

Chapter 3.3 Data Analysis in PQMethod© brings forth an in-depth narration of the procedure specifically applied to the empirically sourced data, encompassing a walk-through

featuring the extraction of factors as well as the chosen type of rotation. Finally, it discusses further observations from the findings of this thesis' study.

3.2.5 Q-Interpretation

The last step of Q-Methodology constitutes the explication and interpretation as to *how* and *why* project managers are of the opinion about sustainability barriers in project management and which all-embracing frame of references as well as standpoints allow derivation (Gijzel et al., 2020, p. 4).

The key aspect discussed in *Q-Interpretation* is the output of summarising accounts, whereas each expounded point of view is being conveyed through a specific factor (Watts & Stenner, 2005, p. 82). These factors contribute to the facilitation of the interpretation, where the most distinguishing factors of each of the barriers are then calculated (Hermans et al., 2012, p. 79).

The significance of the fifth and final phase of Q-Methodology rests not only on the assessment of factor scores and interpretation of the factor array, but also takes into consideration distinguishing and concordant statements of barriers (du Plessis, 2005, p. 167).

Once the analysis of the factors discloses distinctive subjective patterns of project managers, an elaboration on these patterns marks the heart of the empirical investigation. Patterns are reflected upon their dependency and relation to the TPB and give way to the rationale for this thesis in revealing impactful barriers based on behavioural, normative and control beliefs (Barneveld & Silvius, 2022, p. 18).

3.3 Data Analysis in PQMethod©

With the conclusion of *Chapter 3.2* Components of Q-Methodology, the adjacent section is now concerned with the re-enactment of the final data analysis. Corresponding screenshots, property of this thesis' author and taken from the PQMethod© Programme by Peter Schmolck (Schmolck, 2014), aid a clearer understanding by providing graphical visualisations after each data input step.

3.3.1 STATES

With the procedure embodying several steps, the first task to be done, titled "1-STATES", is to input all 45 statements in written from using the external programme "Editor" (formerly "WordPad"). Keeping in mind the condition that each statement has to be marked

down using a single line only, a proper abbreviation of longer statements is necessary, as the programme will automatically truncate statements to 60 characters. Furthermore, the order of the statements must be kept in its original state, as it is of relevancy for the adjoining analysis. Once the statements have been saved as a *<project>.sta* file, the second step in the procedure is being initiated (Schmolck, 2014, p. 4).

3.3.2 QENTER

Next, the data findings from the Q-Sorting process are entered directly in the course of 2 - QENTER. With the system prompting the researcher to type in the title of the study, *Figure 7* shows the initial screen of what the beginning entry looks like. The user is urged to provide information regarding the number of statements sorted during the Q-Sort, the values of the leftmost and rightmost columns (here: -5 and +5), as well as the number of rows for each column, beginning from left:

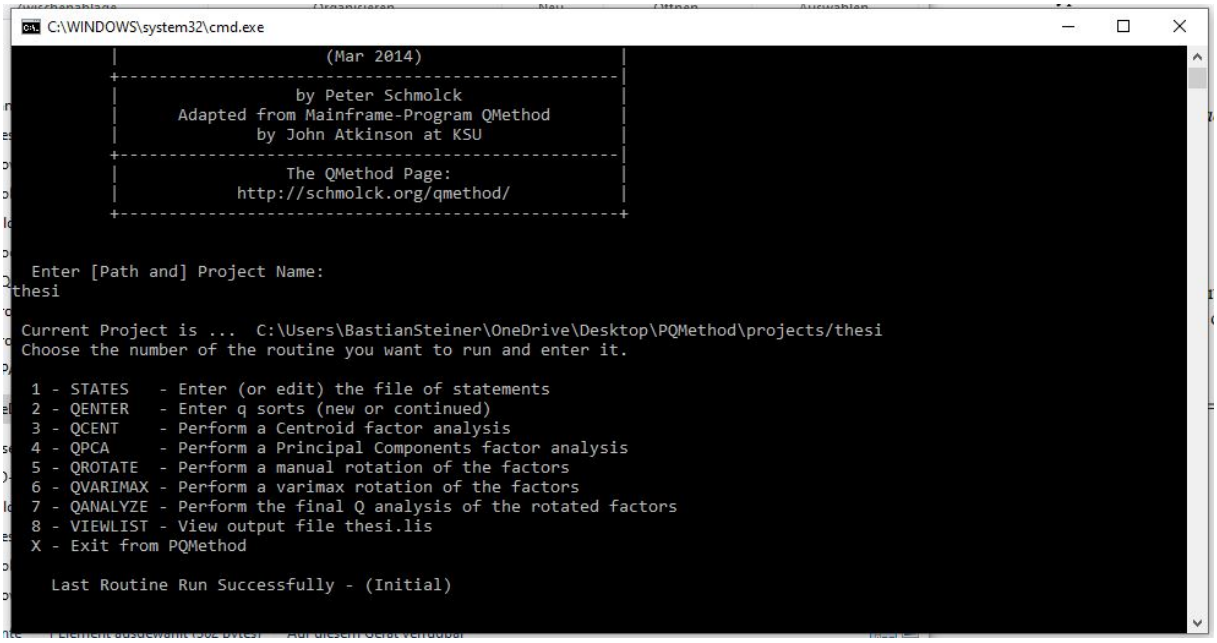

Figure 7: Initial Screen of PQMethod© Programme

Several options to choose from (A - enter a new sort; C - change a previous sort; D - delete a sort; S - show a previous sort; Q - query status of this study; X - exit QENTER) appear on-screen. By pressing "A", the programme requires an input of an identification code for the corresponding subject number one. As various peer-reviewed articles prove, there is no such a thing as a mandatory labelling. Researchers are free to choose whichever tags appear to be most fitting.

Whilst Silvius et al. (2021) chose to label participating companies according to their country codes (*NL1 - NL6* [The Netherlands], *SP1 - SP6* [Spain], *IT1 - IT6* [Italy], *GR1 - GR6* [Greece], *SL1 - SL6* [Slovenia]), Ramlo et al. (2008) coded their sorter identification of participating students using a set of three letters followed by two numbers (ie. *BSM83*, with the first letter representing a student's major [B - Biology, C - Computer Science, A - Anthropology], the second letter indicating a student's academic level [J - Junior, S - Senior, G - Graduate] and the third letter specifying the gender [M - Male, F - Female]; the adjacent numbers designating the understanding of biology [1st number, on a scale of one to ten] and computer science [2nd number]).

For the sake of simplicity, the sorting identifiers for this thesis' participants are simply represented by P1 (Participant 1) up until P28 (Participant 28).

Ensuing is the actual input of the sorted statements, which, as *Figure 8* visualises, is comparatively self-explanatory. With the system requiring numerical inputs for each of the columns and after having typed in all participants' statement numbers, a visual output in the form of the Q-Grid is being provided. After completion it is then up to the researcher to decide which form of extracting (unrotated) factors to rely upon. Both 3 - QCENT, representing *Centroid Analysis*, and 4 - QPCA, the *Principal Components Analysis,* generate a computation of a correlation matrix (*thesis.cor*) by employing the previously created raw data file in QENTER (Schmolck, 2014).

Figure 8: Input of Q-Sort Results

At this point, it shall be noteworthy to mention that the initial correlation matrix solely reflects each of the Q-Sort's relation configurations, not the relations of each of the items per se. Hence, as Watts and Stenner (2005) accordingly grasp the essence of this matter, "To subject this matrix to factor analysis is to produce a set of factor onto which the participants load on the basis of the item configurations they have created [...]" (p. 80).

Resultingly, with two or more of the participants assembling the statements at the same position, *similar* item configurations emerge, with each factor causing *differing* item configurations shared by the implicit characteristics of the participants themselves (Watts & Stenner, 2005, p. 80).

3.3.3 QCENT & QPCA

Next, the unrotated factor loadings file (*thesis.unr*) according to the chosen method of factor analysis is being fabricated (Schmolck, 2014).

Since the previously generated correlations amongst the participants determine which sets of people are clustered together, the extraction of factors serves the purpose of obtaining only common factors (or perspectives) of interest to any Q-Study. The threshold of which factors are to be extracted is prompted by the value of *Eigenvalues,* which are conclusive to being of greater value than 1.00. In the case of a factor's Eigenvalue being less than 1.00, it is judged as being insignificant in nature (du Plessis, 2005, p. 162).

Sparing the reader of this thesis the mathematical reasoning of Eigenvalues, which essentially symbolise the sum of squared factor loadings for each of the given factors, the

significance of said values lies on the principle of "the larger the Eigenvalue, the more variance is explained by the factor" (Kline, 1994, p. 30).

Albeit PQMethod© computes seven factors (3 - QCENT) and eight factors (4 - QPCA) on default (Schmolck, 2014), in order to ensure enough variances within the factors, generally only three to four factors are of greater importance (du Plessis, 2005, p. 162). *Figure 9* exhibits a screenshot of the output of QCENT with its three factors before rotation.

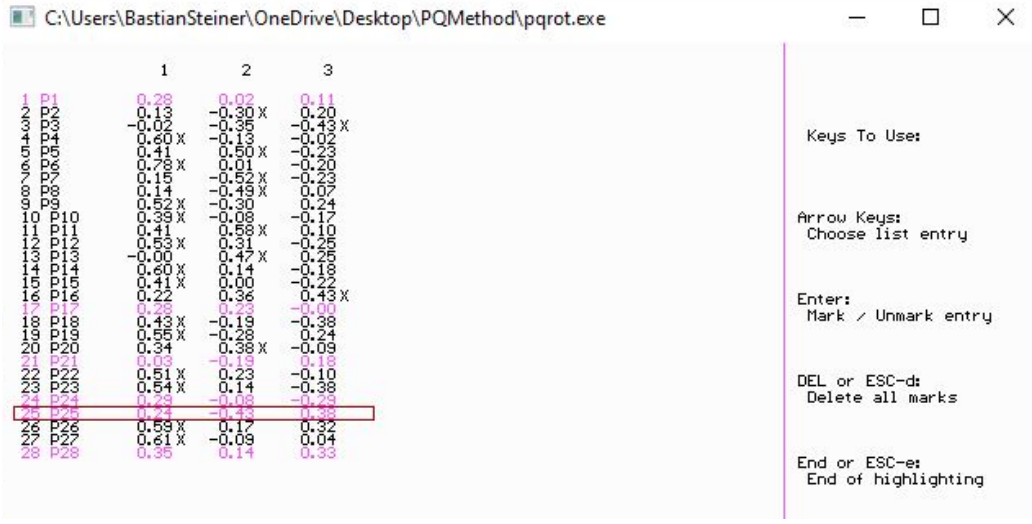

Figure 9: QCENT Output before Factor Rotation

With each column signalling the loadings of Q-Sorts on its representative factor, the loadings themselves amount to the extent to which each one of the factors is associated with each of the Q-Sorts, or, to put it differently, factor loadings are essentially correlations between Q-Sorts and their factors (Comrey, 1973, p. 7).

As indicated by an "X" mark next to some of the loadings, only those factor loadings with a variance of more than 41 (in one case: 37.93) percent are worth the consideration for further factor analysis, whereas participants scoring 10 or less percent of variance do not load significantly enough and are thus regarded as "idiosyncratic" and will not be included in the yet to be done factor rotation and interpretation (du Plessis, 2005, p. 164).

3.3.4 QROTATE & QVARIMAX

With that being said, the next step to be undertaken is the rotation of the factors themselves, whereas the researcher is requested to choose between 5 - QROTATE or 6 - QVARIMAX. In spite of QVARIMAX offering the simplicity of automatically rotating all of the factor loadings by automation in accordance with the Varimax criterion (Schmolck, 2014), the mathematically optimal (analytical) rotation of components (Zabala, 2014, p. 165) oftentimes

represents factor constructs for scientifical purposes in R factor analysis by maximising the purity of saturation (du Plessis, 2005, p. 166), whereas QROTATE (judgemental, theoretical rotation) is the preferred method in Q, according to Onwuegbuzie and Johnson (2021, p. 201).

By deciding on the unique rotation of the plotted sorts within a two-dimensional axis, with each of the axis constituting one of the factors (for instance factor one and factor three, as shown in *Figure 10*), the interrelationships amongst the sorts themselves are preserved, whereas only the location of the axes changes, not the actual sorts and their corresponding values (Onwuegbuzie & Johnson, 2021, p. 201). The ultimate goal of factor rotation, graphically seen, is to obtain clusters of subjects close to either of the axes, generating the highest possible loadings for said factor and its participants (Schmolck, 2014).

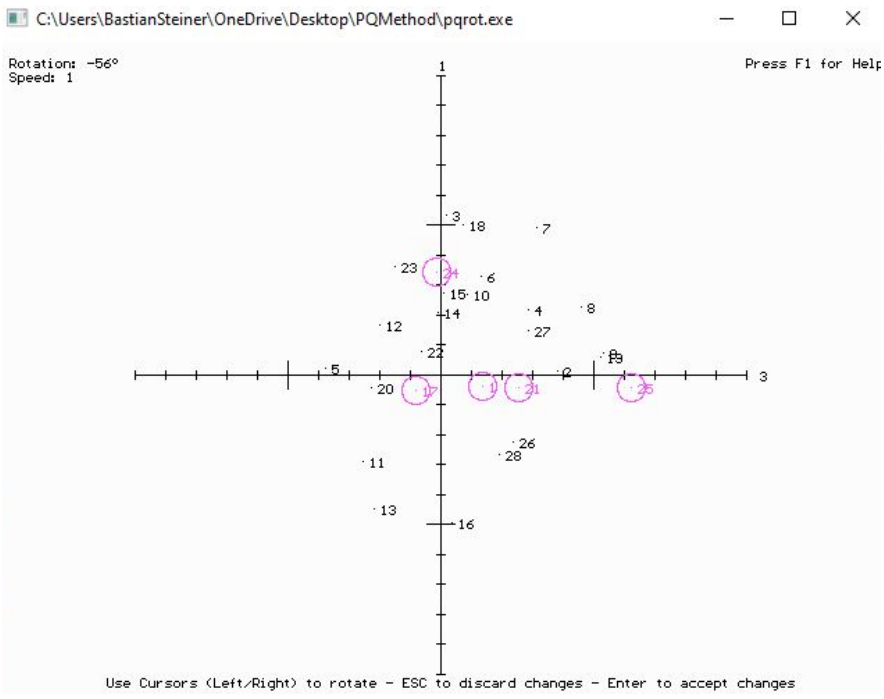

Figure 10: Factor Rotation of Factor One and Factor Three

Once rotated, automatic flagging - associating particular subjects with factors - is done by the programme itself. However, this initial pre-flagging shall only serve as a guidance towards which factors should be taken into consideration for further interpretation, with the standard requirement of selection being an Eigenvalue in excess of 1.00. Additionally, for a factor to be interpretable, it is a standard Q requirement to have "at least two Q sorts that load significantly upon its alone" (Watts & Stenner, 2005, p. 81), as in turn a factor estimate emerges due to a weighted average caused by merging two or more exemplar.

Considering that Q-Methodology first and foremost places its interpretations on these factor scores, the with Q-Sorts associated factors are then subject to further subjective flagging by the researcher. Conventionally, one factor ought to have four to five or more participants defining it, leading to a factor reliability of 0.95 (du Plessis, 2005, p. 168).

Factor reliability is calculated using a built-in formula into PQMethod©. For additional insights, including the effect factor reliability has on the composition of the standard error of factors, the author of this thesis would like to refer to Timothy Brown's work on "Confirmatory Factor Analysis for Applied Research" (T. Brown, 2006).

With the ensuing factor analysis and the generating of theoretical sorts, consensus statements and distinguishing statements being entirely based only on flagged factors, manual flagging depends on each individual researcher's judgement and study context (Ramlo, 2015, p. 75).

Advising the researcher to be "creative in his or her detection and elaboration of unanticipated perspectives" (Schmolck, 1998 in du Plessis, 2005, p. 169), the deliberate flagging might be on certain Q-Sort loadings notably higher on one factor than on another, ensuring no "contamination" between a participant's loading of two factors. On the contrary, as shown in *Figure 11* below, P2's factor loading of -0.30 on factor two has also been marked, despite it scoring comparatively low against other participants.

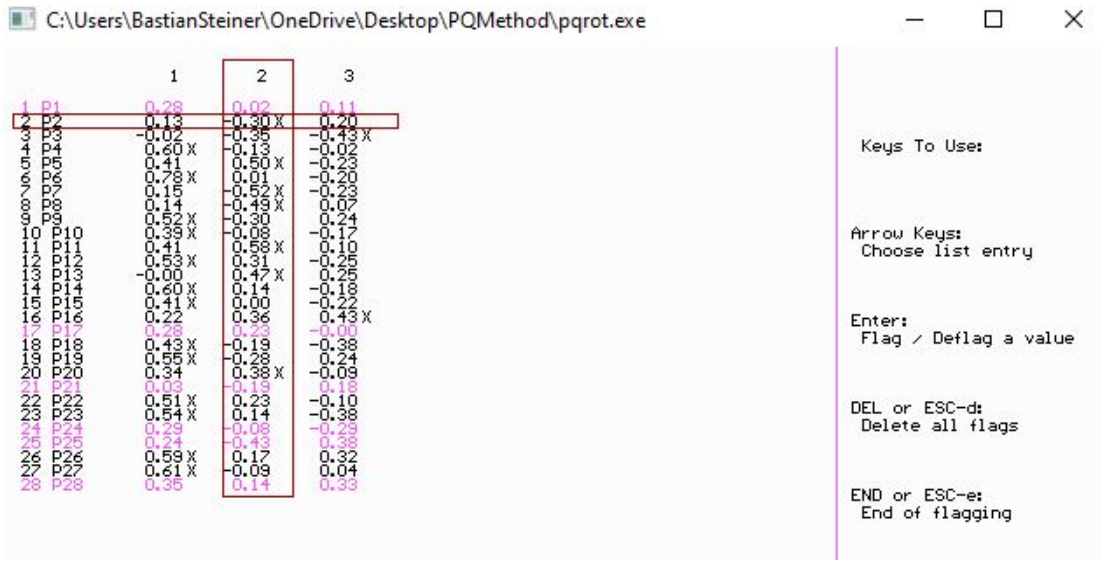

Figure 11: Exemplary Screenshot of Automatic Flagging and Manual De-Flagging

Nonetheless, with P2's factor loadings of merely 0.13 on factor one and 0.20 on factor three, this respondent's perspective with regards to factor two can thus be explained with 30% assurance, hence its flagging has been sustained. Opposingly, P28 scored remarkably average

on each of the factors (0.35 on factor one, 0.14 on factor two and 0.33 on factor three), causing none of the perspectives to be fully inflicted with P28 and thus having decided on judging his or her factor loadings as unworthy of retention. Unflagged factors are then being automatically eliminated in the last step, namely QANALYZE (Schmolck, 2014).

3.3.5 QANALYZE

In the final step, 7 - QANALYZE, a complete analysis of the entirety of collected Q-Sorts and its flagged factor loadings is written and due for interpretation (Schmolck, 2014).

The outcome features a multitude of lists and tables, among which most noteworthy are the correlation matrix between sorts, free distribution data results, correlations between factor scores as well as the particular factor scores for each of the factors (perspectives). Also presented are factor Q-Sort values for each of the statements, standard errors for differences in factor Z-Scores and, most essentially, distinguishing and consensus statements, which mark the heart of the ensuing interpretation and finding of results. The full PQMethod© data output file can be viewed in Appendix D.

4 Findings & Results

> Within the interpretation stage of Q, a researcher does something unique when compared to those who use scaled tests wherein interpretation is not necessary—within the use of scaled tests the meanings have been previously specified. Instead, the researcher creates a 'new gestalt' based on the meanings presented within the Q sorts and represented by the factors that emerged from her/his analysis. (Onwuegbuzie & Johnson, 2021, p. 201)

4.1 Identification of Factors

To briefly review the previous chapter and kickstart the findings of this thesis, data, and more specifically factor analysis, has been applied to lessen the different views of 28 respondents (Q-Sorts) to few but impactful factors, typifying a mathematical description of shared subjective patterns. With the Q-Sorts themselves constituting the primary input for the factors' Eigenvalues and correlations, the results henceforth compose shared perspectives of perceived barriers on sustainability existing among project managers (Gijzel et al., 2020, p. 8).

Moreover, the qualitative remarks by each of the participants will complement the quantitative findings and assist with interpreting certain patterns. A complete transcription of the noted-down comments can be found in Appendix C.

The identification of patterns - and thus interpretation of factors - combines item scores obtained through Q, qualitative data collected during the sorting process as well as this thesis' author's comprehension of the research participants' professional backgrounds and views. For better facilitation of the understanding concerning the next few paragraphs, it shall be mentioned that both the *Factor Q-Sort Values* (thereafter: Q-SV) and the *Z-Scores* (Z-SCR) indicate the position of the statements within one shared perspective. Meaning, items which are either part of the consensus or distinguishing statements or having remarkably high or low Q-SVs or Z-SCRs will be of prime efficacy for evaluation (Zabala et al., 2018, p. 1189). Z-SCRs in particular depict the relationship between the statements and its factors, for instance how much a factor "agrees" with a certain statement (Zabala, 2014, p. 166).

Obtained through 28 participants of this study, three factors could be extracted meeting the statistical criteria to be expounded as shared patterns. Each of the respondents, as shown in *Table 6* on the next page, is related to one (or none) of the found patterns, with the relation being determined by the loadings calculated previously (Zabala, 2014, p. 166).

Participant #	Factor 1	Factor 2	Factor 3
1	0.2502	0.1270	0.1002
2	0.0346	0.0516	0.3793X
3	-0.0004	-0.5469X	0.1104
4	0.5636X	-0.0283	0.2554
5	0.5278X	0.0646	-0.4292
6	0.7905X	-0.1052	0.0945
7	0.0940	-0.4335X	0.3857
8	0.0335	-0.1571	0.4910X
9	0.4016	0.1119	0.4933X
10	0.3933	-0.1562	0.0859
11	0.4808	0.3932	-0.3557
12	0.6176X	-0.0312	-0.2428
13	0.0344	0.4347X	-0.2982
14	0.6413X	-0.0401	-0.0473
15	0.4392X	-0.1599	0.0037
16	0.1990	0.5634X	-0.0720
17	0.3156	0.1268	-0.1263
18	0.4525X	-0.3813	0.1064
19	0.4313	0.1309	0.4785X
20	0.4143X	0.1251	-0.2815
21	-0.0373	0.0676	0.2512
22	0.5502X	0.0617	-0.1152
23	0.6237X	-0.2244	-0.1569
24	0.3185	-0.2671	0.0097
25	0.0766	0.1551	0.6011X
26	0.5370X	0.4108	0.1365
27	0.5640X	0.0449	0.2429
28	0.2997	0.3825	0.1088

Table 6: Participants' Loadings on the three Factors (Grey Cells indicating the Loaded Factor)

The total variance of the three (unrotated) factors combined amounts to 33%, of which the factor loadings are interpreted based on the significance level at $p < 0.01$. *Table 7* additionally lists the Eigenvalues per factor, with factor one showcasing the most significant result of its Eigenvalue being 4.938, whereas factor two scores 2.5463 and factor three 1.7148, still meeting the proposed criteria (T. Brown, 2006, p. 29).

Other general characteristics visible are composed of the number of flagged Q-Sorts (number of defining variables; 12 for factor one, 4 for factor two and 5 for factor three), average reliability coefficient and composite reliability, with the composite reliability of the items in turn affecting the factor reliability (r_{xx}) and setting the basis for the computation of the standard error of factor scores (SE_{fs}) (Nazariadli et al., 2019, p. 6).

	Factor 1	Factor 2	Factor 3
Eigenvalues	4.938	2.5463	1.7148
% Explained Variance	18	9	6
Number of Defining Variables	12	4	5
Average Reliability Coefficient	0.800	0.800	0.800
Composite Reliability	0.980	0.941	0.952
Standard Error of Factor Z-Scores	0.143	0.243	0.218

Table 7: Characteristics of the three Factors

Consensus and distinguishing statements are subject to factor comparison. If the difference between the statements' Z-SCRs is statistically significant (under the premise of the standard error of differences, SED; at a 0.05 level), then the interpretation is as follows: For each pair of factors, what both factors *think* about a certain statement out of the 45 is distinct. If none of the differences between a factor pair is statistically significant (at a 0.01 level), a statement is said to be of consensus (Zabala, 2014, p. 166).

Adjacent, *Table 8* represents the factor correlations: Whereas a factor correlated against itself always inevitably results in a correlation factor of 1.00, the remaining ones show a weak correlation amongst the factors and in turn satisfy the level of uniqueness (Silvius et al., 2021, p. 12).

	Factor 1	Factor 2	Factor 3
Factor 1	1.0000	0.0512	0.2441
Factor 2	0.0512	1.0000	-0.0996
Factor 3	0.2441	-0.0996	1.0000

Table 8: Factor Correlations

Of the 28 participants, 21 (75%) loaded significantly on at least one of the three factors, whereas seven of the respondents were not flagged and in turn not taken into consideration for any further interpretation and analysis. Referring to the loadings of respondents in *Table 6,* P1 exemplifies an individual who did not load significantly high enough on any of the three given factors (0.2502 on factor one, 0.1270 on factor two and 0.1002 on factor three), whereas P11 displays an affiliation towards both factor one (0.4808) and two (0.3932) simultaneously and a strong negative connotation towards factor three (-0.3557). As for the remaining 21 participants who did load impactfully, all of them load severely on one factor only, which is in consistency with the theoretical notion explaining nuanced views of people towards certain perspectives (Hermans et al., 2012, p. 78).

Two out of these 21 participants loaded negatively (P3 and P7), an indication that their perspectives *mirror* (meaning: opposite) the perspectives of others on this particular pattern, not uncommon in Q-Methodology (Silvius et al., 2021, p. 11).

Concludingly, the labelling of the factors themselves is subject to the author of this thesis. Despite labels not being considered as necessary with regards to interpretation, they do serve the purpose of providing the reader with a distinguishable identification of what a certain pattern is about. A meaningful label alludes to the most observable characteristic of a pattern and can be decided upon freely but most fittingly (Zabala et al., 2018, p. 1189). In order to combat inevitable subjective elements of labelling the perspectives, the provision of transparent data is of ultimate interest (Barneveld & Silvius, 2022, p. 23).

Also, statements are accompanied by their respective categories of the TPB framework as well as their subclassifications in the form of (*Category:Subclassification*), for instance Statement #10 *I regard sustainable PM practices as low priority* (*Behaviour:Priority & Risk*).

4.2 Visual Analysis of Factors

The tables and figures put forward in this subchapter disclose the visual findings of the statistical outputs. Ensuing the graphical presentation of the categorical distribution of barriers per factor, all corresponding Z-SCRs of factor one, factor two and factor three were summed up within their categories (behaviour, normative and control) and divided by their number of occurrences among the total number of statements (each of them account for 15 out of 45 statements in total):

	Factor 1	**Factor 2**	**Factor 3**
Behaviour	-0.5851	-0.2079	-0.3564
Normative	0.4447	-0.0561	-0.1291
Control	0.1403	0.2639	0.4854

Table 9: Categories of Barriers per Factor

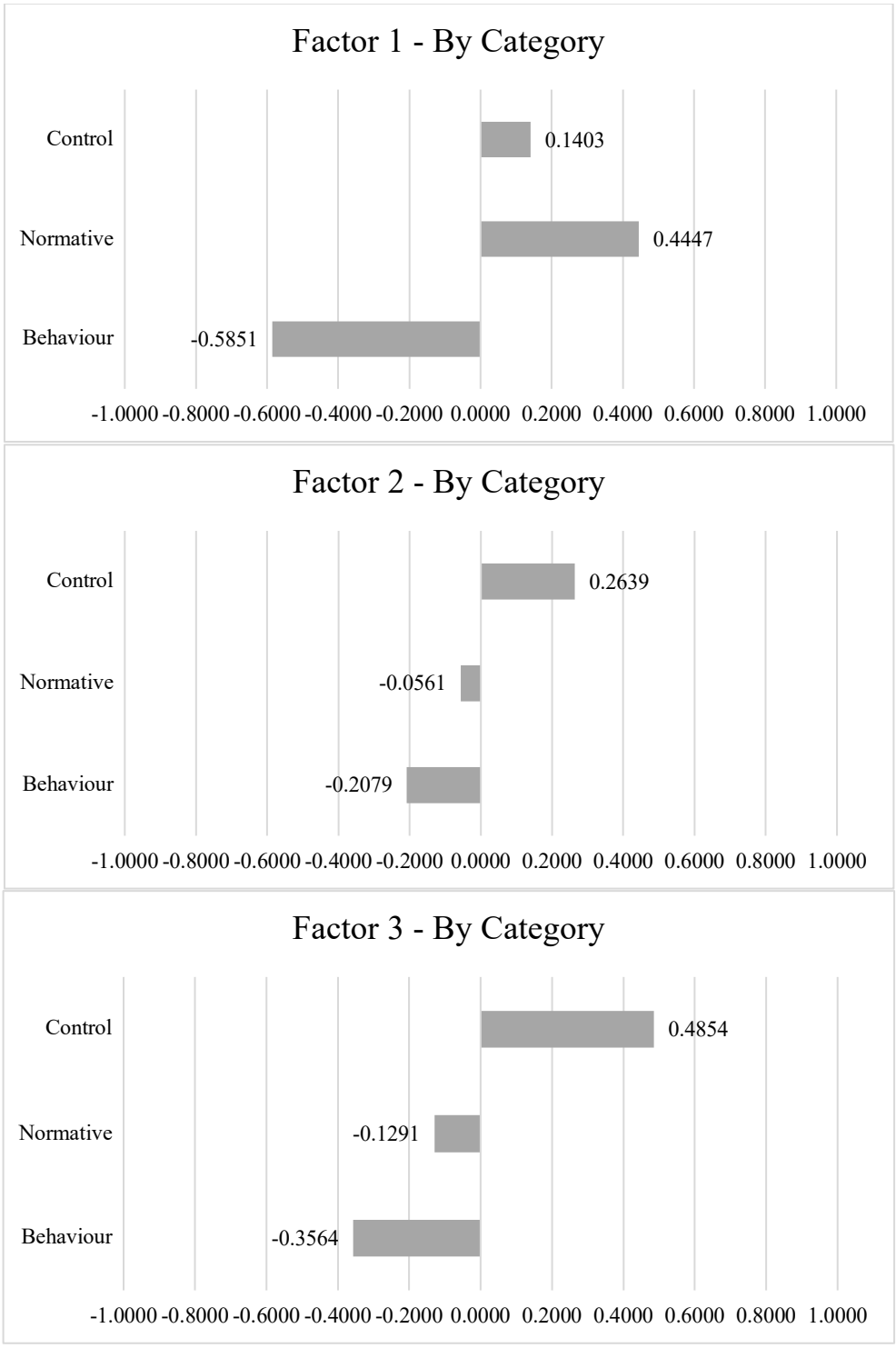

Figure 12: Graphical Representation of the Categorical Distribution of Barriers per Factor

Each of the perspectives differ in terms of the three respective categories, correlating to the experienced barriers in sustainable project management. Confirming the presumption of this master thesis that challenges regarding sustainability underly and hence can be justified using the TPB framework, is shows that project managers experience different obstacles for change (Silvius et al., 2021, p. 12).

Factor one substantially deviates from factor two and factor three: Albeit all three patterns showing negative average scores of the category of behavioural barriers (meaning, statements affiliated and primed using behavioural aspects tend to be most likely disagreed with), perspective one indicates the highest peak - equalling the highest score - among the category of behaviour. Keeping in mind the umbrella question of the sorting procedure ("*As a project manager, I do not adopt sustainable project management practices, because ...*"), peaks to the left suggest that this category of sustainable project management barriers is not considered to be much of an obstacle. In contrast, peaks to the right, corresponding to an agreement, indicate that respondents of this study encounter said categories indeed as barriers to sustainability (Silvius et al., 2021, p. 12).

Factor one further shows a positive score of 0.4447 within the category of normative beliefs, suggesting that participants of factor one moderately perceive the normatively primed statements as an obstacle to implementing sustainability within their projects. Control aspects are experienced as comparatively low, yet as a positive (agreed on) barrier.

Analogue to factor one, factor two also displays a negative score on behavioural influences, although not a strong one. Opposingly, normative statements are also viewed as not constituting a barrier to sustainable project management implementation, giving their negative average score of -0.0561. Despite not being of fundamental impact, it does stand out that individuals assigned to factor one perceive normative matters, such as Statement #25 *Company procedures limit the consideration of sustainability in the project* (*Normative:Project's Nature*) as a barrier to sustainability, whereas project managers of factor two averagely disagree with such statements, thus not recognising them as solid obstacles.

In spite of this revelation, factor two scores even stronger in the category of "Control", with its peak being at 0.2639, implying that project managers of factor two most strongly experience controlling issues as an obstacle towards sustainability. Nonetheless, as factor three will prove, factor two shall be judged as the least discerning one of all three patterns, as its average Z-SCRs are lower in comparison to factor one's and factor three's, but still prove to be significant towards the contribution of answering this thesis' research question.

Factor three shares similarities with both factor one and factor two. Closely resembling factor one in the sense that both score moderately to strongly negative on behavioural challenges, both factors also respond positively to control beliefs. Although with factor one's control peak merely scoring an average of 0.1403, factor three's averages at 0.4854, betokening those respondents' principal barriers to implementing sustainability being

of controlling nature. Normative barriers go in line with factor two's view, scoring slightly negative and thus not accounting for sustainable hindrances.

Besides the analysis of average scores of the categorical distribution of barriers per factor, an additional inspection of the subclassification is yet outstanding. In total, six of these classifications are found within all 45 statements. Nevertheless, not all are represented equally within the Q-Sample. For this purpose, *Table 10* below lists the count of subclassifications within the full set of statements:

Labels	Count of Classification
Motivation	7
Knowledge & Skills	6
Policy	7
Priority & Risk	9
Project's Nature	8
Influence & Awareness	8
Total	45

Table 10: Count of Subclassifications in Q-Sample

Employing the same procedure as for *Table 9*, *Table 11* below lists the mean outcomes for the subclassifications of their corresponding factors, regardless of their TPB categories:

	Factor 1	Factor 2	Factor 3
Motivation	-0.5636	-0.1561	0.1056
Knowledge & Skills	0.1978	0.2307	-0.0122
Policy	0.6274	-0.1473	0.3937
Priority & Risk	-0.1926	-0.1086	-0.0902
Project's Nature	-0.0309	0.4025	0.4138
Influence & Awareness	0.0431	-0.1879	-0.7401

Table 11: Subclassifications of Barriers per Factor

Yet again, the numerical values appear of even stronger insightfulness when presented visually:

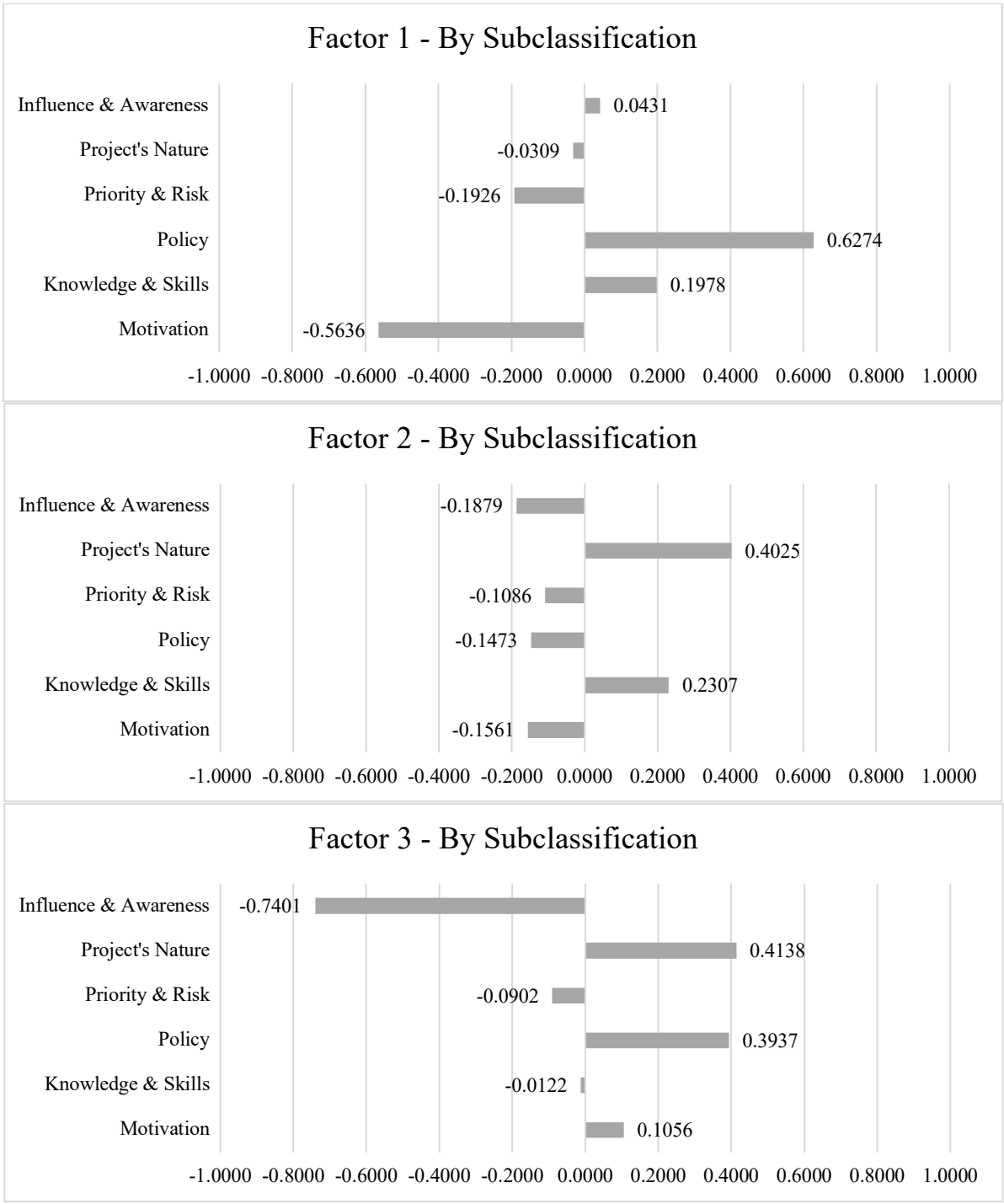

Figure 13: Graphical Representation of the Subclassificational Distribution of Barriers per Factor

The subsequent chapters will comment on the findings of the individual factors in more detail. Supplementary interpretation, also with regards to the respondents' demographics, such as business sectors, project sizes and years of experience as project managers, will be

given increased attention at the end of each factor unveiling as well as in *Chapter 5.4* Perspectives & Participants Demographics.

4.3 Factor One

Project managers of factor one believe that project owners and clients are in charge of driving sustainability (#19) and are of the opinion that company procedures limit contemplation regarding sustainability (#25). This factor further encapsulates a firm standpoint with team members lacking necessary competences and skills, henceforth constituting a barrier towards environmentally-friendly practices (#33 and #34). On top of that, a deficiency in interest amongst stakeholders and project team members provides a means for increased barriers to these respondents. Perspective one is the most positive in its perception of and contribution to sustainability in project management: Sustainability does stimulate them (#1), is not being viewed as being troublesome (#4) and neither favoured over traditional project management practices (#9) nor difficult to be integrated in current routines (#39). This factor experiences the most significant barriers in the category of normative with the corresponding subclassification of *Policy*.

4.4 Factor Two

The projects themselves, not the project managers, take central stage in this pattern of perceived barriers. Challenges affiliated with this perspective are predominantly of controlling manner, with project managers not being convinced that sustainability can be addressed by everyone and in every project (#41) and the size-wise confinements of their projects (#12). In fact, project managers themselves perceive putting sustainability into practice as inconvenient (#5), feel overwhelmed by it (#5) and simultaneously care about potential reputational risk (#23 and #28). This pattern favours a top-down approach and is intentionally reluctant to employ sustainable methods, undermined by the powerful disagreement of not being aware of any environmental impacts (#7), not seeing a connection between the project's objectives and sustainability (#14) as well as not being in the know of environmental risks and issues at hand (#36). Factor two sees its hindrances in the control category and its further subclassification of *Project's Nature* as well as *Knowledge & Skills.*

4.5 Factor Three

The absence of clear environmental issues or impacts (#36) as well as the lack of experience with sustainable project management enactments (#35) compose the prime defining aspects of this view. Project managers belonging to this pattern are further frustrated by their projects not being suitable for green project management applications (#43) and admit to the difficulty of integrating it in their projects (#39). These perceived barriers combat the understanding that the market does value sustainability project management (#30) and that they will be confronted with positive reactions and feedback regarding environmentally-friendly measures (#28). Respondents affiliated with this factor further convey the meaning that their appreciation and willingness can eventuate into the implementation of sustainable-related practices but feel severely put at a disadvantage by their projects' natures as well as rules and regulations. The last factor of the three is handicapped due to control beliefs, more detailed by *Project's Nature* and *Policy* barriers.

4.6 Consensus Statements

The QANALYZE output additionally issues the listing of consensus statements: Statements were no indicative difference between any of the factors can be concluded on. In principle, one statement can therefore disclose the same scores for every factor the like and thus does not discriminate between different perspectives (du Plessis, 2005, p. 172).

In this study, eight consensus statements were obtained. *Table 12* yields an overview:

Consensus Statements

Those that do not distinguish between a*ny p*air of factors (All listed statements are non-significant at p > 0.01, and those flagged with an * are also non-significant at p > 0.05)

Statement #	Statement	Category	Factor 1	Factor 2	Factor 3
10	I regard sustainable PM practices as low priority	Behaviour:Priority & Risk	0	-1	-1
15*	I do not feel responsible for the sustainability of my projects	Behaviour:Influence & Awareness	0	-1	0
17*	Addressing sustainability will not give me a better status as a project manager	Normative:Motivation	-1	-2	-1
20	My company does not adopt environmentally-friendly PM practices	Normative:Policy	1	-1	-1
32*	Methods for sustainable project management practices are missing	Control:Knowledge & Skills	1	0	1
37*	I do not have the methods or practices of sustainable project management	Control:Policy	1	0	1
42*	It is too difficult to align the project with sustainability goals or objectives	Control:Project's Nature	0	-2	-1

45*	A proactive involvement and engagement of stakeholders requires too much effort	Control:Influence & Awareness	1	2	1

Table 12: Consensus Statements

Alluding to, yet again, the primary understanding that consensus statements have the same or a similar Q-Grid placement amongst all three factors, it is untrue to believe that similar allocations automatically result in homogeneous interpretations across the patterns (Onwuegbuzie & Johnson, 2021, p. 205).

To exemplify, statement #20 (*My company does not adopt environmentally-friendly project management practices* [*Normative:Policy]*) has been standardly placed on Q-SV 1 (factor one), -1 (factor two) and -1 (factor three), therefore conveying the meaning of a shared standpoint of participants of all three factors regarding this statement. Nonetheless, whereas project managers belonging to perspective one interpret this category and its subclassification as being the strongest obstacle towards sustainable practices, respondents of factor two and three might feel relatively casual about the statement in question but nevertheless do not experience *Normative:Policy* related issues as barriers in essence.

Despite the differences discussed earlier on, the consensus statements confirm the proportioned viewpoints of relative indifference regarding the eight statements, proven by the point that each of the Q-Grid placements centers around zero (neutral; neither agreement nor disagreement). For instance, Statement #37 (*I do not have the methods or practices of sustainable project management* [*Control:Policy]*) did not make an appearance in any of the distinguishing data sets of the three perspectives, nor was it given much attention during the sorting processes either.

13 out of the overall 28 participants allocated given statement within the vicinity of 0: Two project managers assigned it to -1, four to 0 and seven to +1, signalling mediocrity among business professionals due to various potential reasons. No qualitative comments have been made about this statement either, which is why plausible explanations are subject to speculation.

Contrastingly, statement #15, concerned with personal responsibility (*Behaviour:Influence & Awareness*), is of rudimentary distribution: Five placements on -1 as well as +1, respectively, and three placings on neutral (0). Spanning a red threat to what has been mentioned in the very beginning of this thesis, namely the elucidation of barriers as "contradictory sustainability constraints" (Sabini & Alderman, 2021, p. 379), the underlying framework of TPB advocates the higher likelihood of performing a certain behaviour (in this case,

the integration of sustainable project management enactments) based on an individual's intention to do so (Ajzen, 1991, p. 182).

Whether it is due to reluctance, unbeknownst assigning or sheer indifference that #15 as well as the majority of the remaining consensus statements does not stimulate intentions and in turn actions remains unclear. Only one research participant, P19, vocalised on it: "We have a sustainability expert [Ann.: in our project team], but still if we can integrate it [Ann.: sustainable practices], why not?", communicating the possibility of active involvement and thus experiencing a sense of responsibility, but no enforcing requirements as such.

The consensus statements do not provide substantial insights regarding a particular set of statements belonging to a certain subclassification. However, 50% of the statements do conform to control beliefs, giving room for interpretation that, despite the category of control being the sole category judged as a barrier by all three patterns, certain statements are simply of minor worthiness. In turn, other control statements constitute even stronger barriers, giving this category's positive scoring in the overall results (*Figure 12*).

Distinguishing even further, consensus statements can be broken down into "Top 10 Most Consensus Statements" and "Top 10 Least Consensus Statements", as carried out by Gijzel et al. (2020, p. 12) and Silvius et al. (2021, p. 17). *Table 13* and *Table 14* below advert to the 20 statements in total, whereas the former table naturally displays the same statements (with the addition of two more) as in *Table 12*. The latter exhibits the other end of the spectrum, scilicet statements representing entirely different scorings amongst the three perspectives shared by project managers:

Top 10 Most Consensus Statements

Factor Q-Sort Values for Statements sorted by Consensus vs. Disagreement (Variance across Factor Z-Sores)

Statement #	Statement	Category	Factor 1	Factor 2	Factor 3
17	Addressing sustainability will not give me a better status as a project manager	Normative:Motivation	-1	-2	-1
45	A proactive involvement and engagement of stakeholders requires too much effort	Control:Influence & Awareness	1	2	1
15	I do not feel responsible for the sustainability of my projects	Behaviour:Influence & Awareness	0	-1	0
37	I do not have the methods or practices of sustainable project management	Control:Policy	1	0	1
32	Methods for sustainable project management practices are missing	Control:Knowledge & Skills	1	0	1
42	It is too difficult to align the project with sustainability goals or objectives	Control:Project's Nature	0	-2	-1
10	I regard sustainable PM practices as low priority	Behaviour:Priority & Risk	0	-1	-1

20	My company does not adopt environmentally-friendly PM practices	Normative:Policy	1	-1	-1
18	The project team prefers to stick to already-established project management routines	Normative:Motivation	3	2	3
22	Implementing sustainability practices may hurt my relationship with the project owner / client	Normative:Priority & Risk	-1	1	0

Top 10 Least Consensus Statements

Factor Q-Sort Values for Statements sorted by Consensus vs. Disagreement (Variance across Factor Z-Sores)

Statement #	Statement	Category	Factor 1	Factor 2	Factor 3
30	The market does not value sustainable project management practices	Normative:Influence & Awareness	2	3	-5
24	According to the project owner / client, sustainability is not relevant for this project	Normative:Project's Nature	0	-5	2
21	Sustainability is not the project's performance priority	Normative:Priority & Risk	4	-2	4
35	I do not experience with sustainable project management practices	Control:Knowledge & Skills	-3	-2	4
44	I believe my project is too small to reap the benefits of implementing sustainability	Control:Project's Nature	-2	4	2
34	The team does not have the competences to integrate sustainability in the project	Control:Knowledge & Skills	3	0	-4
4	I perceive implementing sustainability in projects as inconvenient	Behaviour:Motivation	-3	4	0
23	When integrating sustainable PM practices, my reputation as a project manager could be at risk	Normative:Priority & Risk	-4	2	-4
12	I believe that sustainable PM is only aimed at large(r), impactful projects	Behaviour:Project's Nature	-1	4	0
1	Sustainability does not stimulate me	Behaviour:Motivation	-5	0	-3

Table 13: Top 10 Most Consensus Statements & *Table 14:* Top 10 Least Consensus Statements

Akin to the top ten most consensus statements, which are populated by statements of all categories (behaviour: 20%, normative: 40%, control: 40%), the top ten least consensus statements are evenly distributed amongst the categories, too (behaviour: 30%, normative: 40%, control: 30%). As opposed to the top most consensus statements scoring comparatively neutral in each of the factors, the least consensus statements heavily differ from one another.

The largest range evinces statement #30: Being viewed as a moderate barrier to sustainability by perspective two project managers (average Q-Grid position of 3), perspective three professionals could not disagree more with certitude that markets do *indeed* value sustainable project management practices, revealing a range of eight.

Essentially, statement #30 also makes an appearance in the most distinguishing statements for factor three as the lowest scoring statements with a Z-SCR of -1.94, signalling the

strongest disagreement and a distinct non-barrier therefore. P10, who did not load significantly enough on any of the three factors and assigned the statement in question on value positive 3, remarks: "Our users do not care, they only focus on costs".

Another participant whose contribution did not correspond to any of the factors, P24, justified her allocation on neutral with "The market provides the framework", expressing the necessity of becoming cognisant of the markets and their respective requirements. As a factor three contributor and having assigned #30 on negative 5, P19 admits that within his field of operations, "[Sustainability] is pushed by the funding agencies", whereas P28, having it placed on positive 5, clearly communicates the following: "The end user and/or buyer behaviour has started to change with more focus on sustainability when it comes to making a choice. Therefore, companies invest a lot in changing the product design, production, etc. to be more sustainable. However, when it comes to the project management practices within companies, those are not the priority".

Touching on an arguably sensitive topic, the market appears of having dominant gravity with reference to sustainability in project management. The market, associated with normative beliefs and therefore being concerned with the approval or disapproval of performing a given behaviour from the external side, constitutes a normative "resource" needed to perform a certain (here: sustainable) behaviour, according to the TPB. Whereas all three beliefs are said to be of influencing character of intention and in turn behaviour, this statement provides a solid foundation for the argumentation that a "socially expected mode of conduct" (Ajzen, 1991, p. 199), referring to normative beliefs, exceeds both personal evaluation of behaviours (attitudes) as well as beliefs regarding experience, trust, knowledge and applications (perceived behavioural control) (Ajzen, 1991, p. 199).

To summarise the subchapter on consensus and non-consensus statements, it should once again be recalled that this thesis' aim is not to bring forth generalisations about a broad population. Instead, the findings serve as a way of contextually comprehending project managers' attitudes, beliefs, values and perceptions regarding an array of influencing barriers and non-barriers. With certain statements being represented and communally agreed upon within all three perspectives (consensus), others necessarily evoke contradicting discernments (non-consensus). Notwithstanding, the three patterns themselves are not consequently in opposition: By elucidating different patterns - different forms of *seeing* and *interpreting* -, the three perspectives and corresponding statements offer possibilities of understanding the viewing of

barriers of project managers in real-life contexts and resultingly being of usefulness to a broad field of further applications (Zabala et al., 2018, p. 1190).

5 Discussion of Perspectives & Further Implications

5.1 Perspective One - *Motivated Yet Confined*

By revealing the properties of project managers' perspectives for factor one, *motivated yet confined* project managers, the results of the factor analysis from twelve representative participants contributed to this pattern. Accounting for 18% of explained variance, these twelve business professionals share a recurrent view with the multitude of statements for perspective one. *Table 15* unveils the scores of the most pervading statements for this pattern:

Distinguishing Statements for Pattern 1 ($p < 0.05$; Asterix (*) indicates significance at $p < 0.01$)

Statement #	Statement	Category	Q-Sort Value	Average Z-Score
19	I believe it is the project owner's or client's responsibility to drive sustainability	Normative:Policy	5	2.08*
25	Company procedures limit the consideration of sustainability in the project	Normative:Project's Nature	4	1.39*
11	I am satisfied with the current PM practices in my project	Behaviour:Priority & Risk	3	1.34*
33	The project team lacks the knowledge to understand how sustainability can be implemented in the project	Control:Knowledge & Skills	3	1.21*
34	The team does not have the competences to integrate sustainability in the project	Control:Knowledge & Skills	3	1.04*
36	For my projects, no clear environmental issues or impacts have been identified	Control:Policy	2	0.94*
29	I feel there is a lack of interest amongst project team members	Normative:Influence & Awareness	2	0.88*
6	I am not aware of any sustainability related legistlation for my project	Behaviour:Policy	2	0.77*
41	I do not believe that sustainability can be addressed by all project managers in every project	Control:Project's Nature	1	0.26*
27	Stakeholders are not interested in sustainability	Normative:Influence & Awareness	1	0.19
24	According to the project owner / client, sustainability is not relevant for this project	Normative:Project's Nature	0	-0.02*
31	Sustainability is too complex and not practical enough to apply in the project	Control:Knowledge & Skills	0	-0.39*
40	Considering sustainability does not make my projects more successful	Control:Priority & Risk	-2	-0.59*
44	I believe my project is too small to reap the benefits of implementing sustainability	Control:Project's Nature	-2	-0.63*
28	I expect to be confronted with negative reactions or feedback about the sustainable PM practices	Normative:Influence & Awareness	-2	-0.64
7	I am not aware of any environmental risks or impact of my project	Behaviour:Priority & Risk	-2	-0.66
39	I believe that sustainability is difficult to integrate in the project	Control:Policy	-3	-0.70*

4	I perceive implementing sustainability in projects as inconvenient	Behaviour:Motivation	-3	-1.05*
9	I favour traditional PM over new, sustainable practices	Behaviour:Priority & Risk	-3	-1.27
1	Sustainability does not stimulate me	Behaviour:Motivation	-5	-2.02*

Table 15: Distinguishing Statements for Pattern 1

Project managers of this perspective strongly emphasise that behavioural beliefs are imperative to integrating sustainability in project management practices. In particular, Statement #1, *Sustainability does not stimulate me* (*Behaviour:Motivation*), exhibits the strongest negative Z-SCR of -2.02 for this given pattern, exemplifying that this quote has been placed on the Q-Grid position -5 (*strongly disagree*) most often. Numerically judged, three people out of 12 entirely disagreed (grid location -5) with this statement, whereas five people almost entirely disagreed (-4) and another three respondents felt a medium-to-strong aversion against it (-3).

P4 commented on that, claiming that "[This is the] statement that is the least truthful, as it is about me; It is crucial for me on a personal level" and that it would suggest "[...] power over my own feelings".

Being of similar opinion, P12, who originally hails from Italy but completed her degree in "Leadership in Sustainability" in Sweden, also declares of being "[...] curious and intrinsically motivated; I simply totally disagree [with this statement] and [try to] incorporate sustainability in my work practices, [despite] the slow progress in Italy".

Having also placed this statement in the *strongly disagree* box of the Q-Grid, P9 justifies it by stating that "[...] this is because I think that sustainability should be an important factor of each project. In my opinion, it is necessary to take into consideration social, environmental and administrative aspects of a project, not just the economic ones".

Revealing such a strong penchant towards Statement #1 alongside the qualitative remarks conforms to Ajzen's (1991) notion of the stronger a certain intention is engaging with a certain behaviour, the more likely the performance of such a behaviour (p. 182). Project managers ought to be compelled showing intrinsic motivation and willingness to integrate sustainable practices first and foremost, or else it has to be considered amongst being the greatest barrier of implementation in the first place. Furthermore, it in turn substantiates the findings of Armel and Danièle (2021), who argue that intention directly influences behaviour and thus emotional blockage constitutes a prime barrier if not addressed by individuals personally (p. 46).

The importance of not only behavioural acceptance but also willingness in the first defining aspect of this pattern is well served by further distinguishing statements: Ensuing Statement #1 are Statement #3 *I do not experience a moral or ethical obligation to do so* and Statement #2 *I do not feel motivated to address the topic of sustainability*, both of them being of the classification *Behaviour:Motivation* and therefore giving substance that these barriers are the most strongly disagreed upon.

In addition, the analysis showed three more statements of this factor scoring a Z-SCR of ≤ -1.00, with statement #4 (-1.05) and #9 (-1.27) also being of behavioural background, whereas #23 (-1.39) constituting an outlier of the classification *Normative:Priority & Risk*.

Resultingly, with five out of six of the most significant placements corresponding to the behavioural influences, these statements are not considered to be much of a barrier by the respondents but rather could give way to fostering sustainability through change of values and practices, sharpening people's attitudes and preferences (Nye, 1990, p. 167)

The pattern of motivated yet confined project managers not only shows a strong negative peak in the subclassification of *Motivation* (-0.5636), but contrastingly an equally strong right-handed peak within *Policy* (0.6274), as indicated in *Figure 13*.

On top of the list, statement #19 *I believe it is the project owner's or client's responsibility to drive sustainability* (*Normative:Policy*) scores the highest, with a Q-Sort Value of 5 and a Z-SCR of 2.08. Participant-wise, four project managers assigned #19 on the Q-Grid position +5, whereas another ten individuals - marking a record-number for a statement assigned - placed it on +4, indicating a remarkable consensus of agreeableness.

Several comments have been made, bridging quantitative outcomes and qualitative interpretations: One of the participants (P5), who instantly assigned said statement upon reading it for the first time and stuck with its initial placement until the very end, commented on it saying "[Sustainability] is a top-down approach, therefore it is the only way to incorporate it in a project; Who defines the project [also] defines the goals".

P12, who, prior to the data gathering introduced herself as being utterly passionate about the topic at hand even though her industry field does not fully allow for environmentally-friendly practices, emphasises the term of *forced proactivity,* stating that "Nowadays I am considered to be an expert on this topic, whereas a few years ago nobody cared" as well as "in my company, the special focus lies [more] on profits and reputation than trying to introduce sustainability strategies".

However, P12 indeed admits that within her sector, pressure from the European Union advances progress towards sustainable project management implementation, although "regulations do slow down the processes".

Both P17 and P19, despite P17 having not loaded significantly enough on any of the factors, agree on the substance at hand, declaring that "Responsibility [is] mainly on the clients but also on [the] own company: Project managers do have an influence, but are still confined to the head of the firm" (P17) and "because [if sustainability is] wished by the client, you simply do it, even though a project manager might not be personally motivated".

Interestingly enough, two other respondents commented on this statement with the German idiom "Die Macht liegt beim Kunden" ("The power lies within the client"), supporting the findings of Costache et al. (2021, p. 5) and their claim of an existing congruence between personal aspirations and organisational standards.

With the normative category scoring a high right peak, it is not only the subclassification of *Policy* being affiliated with it: *Normative:Project's Nature* scores second highest among the distinguishing statements for factor one, followed by *Normative:Influence & Awareness*, indicating that statements of these groupings constitute further barriers to sustainability for respondents loading on factor one.

Factor one additionally lists barriers aligned with control beliefs, with four out of ten (40%) of the distinguishing statements for factor one being represented by this category. Among these control statements, two of them correspond to the subclassification of *Knowledge & Skills* (both Z-SCRs > 1.00), whereas the other two (*Control:Policy* & *Control:Project's Nature*) still remain within positive Z-SCRs, but do not contribute to the interpretation of findings singularly.

For motivated yet confined project managers, their low-ranking behavioural belief statements and simultaneously high-ranking control statements implicate that personal values, attitudes and aspirations do not constitute a challenge or barrier to be overcome, but in reverse signal personal willingness to integrate and foster the implementation of sustainable project management practices within their fields of work.

Consequently, factor one comes as a surprise in the sense that one's behaviouristic obstacles are not obstacles as such, but rather are subject to facilitate change within the field of sustainable project managers and hence form quite the opposite of barriers to sustainability.

Marnewick et al.'s (2019) study on stimulus patterns conveys a shared notion in the sense that one of their patterns was found to constitute intrinsically motivated individuals, too,

with project managers of this pattern being of the dominant perspective in their findings (p. 13).

On the contrary, normative and - to a slight extent - control issues form the most severe barriers, hindering the enactment on sustainability-friendly practices in a project's various phases. Due to the fact that this pattern is being represented by twelve out of the overall 28 participants (42.86%), implications are primarily targeted at project owners and clients themselves, whereas project managers themselves potentially show a great penchant towards new and sustainable practices.

5.2 Perspective Two - *Motivated Yet Lacking Competency*

Pattern two, *motivated yet lacking competency* project managers, being representative of four participants (14.29%), scored comparatively high on normative beliefs (0.2639) and mirrors factor one in the sense of a negative association with the category of behaviour (-0.2079). Albeit these similarities, respondents sharing this perspective of perceived barriers, statements annexed with normative issues are not perceived as barriers per se, scoring also slightly negative (-0.0561).

Inevitably this leads to the initial conclusion that, with the consideration that five out of the ten most distinctive negative statements (*Table 16*) are of normative nature, project managers of this pattern do not perceive constraints regarding externally inflicted social pressure or expectations as barriers to sustainability. Neither do they view, in line with motivated yet confined respondents, personal beliefs as an obstacle, but are indeed conscious of control-related barriers, typically referring to knowledge and/or the application and success regarding a project, as the distinguishing statements in the following paragraphs will shed light on:

Distinguishing Statements for Pattern 2 ($p < 0.05$; Asterix (*) indicates significance at $p < 0.01$)

Statement #	Statement	Category	Q-Sort Value	Average Z-Score
41	I do not believe that sustainability can be addressed by all project managers in every project	Control:Project's Nature	5	2.14
44	I believe my project is too small to reap the benefits of implementing sustainability	Control:Project's Nature	4	2.13*
12	I believe that sustainable PM is only aimed at large(r), impactful projects	Behaviour:Project's Nature	4	1.56*
4	I perceive implementing sustainability in projects as inconvenient	Behaviour:Motivation	4	1.51*
5	I feel overwhelmed by the complexity of the sustainable PM practices	Behaviour:Knowledge & Skills	3	0.68

23	When integrating sustainable PM practices, my reputation as a project manager could be at risk	Normative:Priority & Risk	2	0.62*
18	The project team prefers to stick to already-established PM routines	Normative:Motivation	2	0.58
28	I expect to be confronted with negative reactions or feedback about the sustainable PM practices	Normative:Influence & Awareness	2	0.57*
13	I believe that for the types of projects I manage, considering sustainability unnecessarily increases the cost	Behaviour:Project's Nature	1	0.47
39	I believe that sustainability is difficult to integrate in the project	Control:Policy	1	0.40*
8	I think that sustainability increases the risk and uncertainty in the project	Behaviour:Priority & Risk	1	0.36*
33	The project team lacks the knowledge to understand how sustainability can be implemented in the project	Control:Knowledge & Skills	0	0.19*
1	Sustainability does not stimulate me	Behaviour:Motivation	0	0.18*
34	The team does not have the competences to integrate sustainability in the project	Control:Knowledge & Skills	0	0.17*
9	I favour traditional PM over new, sustainable practices	Behaviour:Priority & Risk	0	0.13
26	Endusers are not interested in sustainability	Normative:Influence & Awareness	0	0.07
16	My project owner or client is not giving me additional incentives / compensation for the extra effort of sustainable practices	Normative:Motivation	-1	-0.01*
21	Sustainability is not the project's performance priority	Normative:Priority & Risk	-2	-0.90*
27	Stakeholders are not interested in sustainability	Normative:Influence & Awareness	-3	-1.21*
7	I am not aware of any environmental risks or impact of my project	Behaviour:Priority & Risk	-3	-1.27
14	I do not see a connection between the project's objectives and sustainability	Behaviour:Influence & Awareness	-4	-1.80
36	For my projects, no clear environmental issues or impacts have been identified	Control:Policy	-4	-1.91*
24	According to the project owner / client, sustainability is not relevant for this project	Normative:Project's Nature	-5	-2.29*

Table 16: Distinguishing Statements for Pattern 2

Once again starting from the negative side of the Q-Grid, concerning those statements which do not specify barriers to respondents of this pattern, the analysis of distinguishing statements brings forth statement #24 (*Normative:Project's Nature,* Z-SCR: -2.29) as the most disagreeable statement in terms of impeding sustainable project management practices. *According to the project owner/client, sustainability it not relevant for this project* conveys the understanding of certain project managers that sustainable relevancy for project owners or clients does not constitute a barrier. Nevertheless, the opportunity for project managers pragmatically addressing sustainability is given.

The highest peak of factor two relates to the positive scoring of control beliefs (0.2639), with its top two distinguishing statements being of this category. Project managers

are of the opinion that sustainability cannot be addressed by *all* project managers in *every* project (Statement #41, *Control:Project's Nature*) and that their respective projects are too small to reap the benefits of implementing sustainability (Statement #44, *Control:Project's Nature*). These are among the biggest barriers to sustainable project management implementation and treat a project's given nature as prime hindrance.

This further proves to be true upon the comparison with the subclassificational distribution of barriers (*Figure 13*): *Project's Nature* represents the highest peak (0.4025) among the rest of the influencing barriers for factor two, followed by *Knowledge & Skills*, primarily of behavioural nature.

One of the respondents delivered an elaborated explanation as to why having assigned #41 on the grid position of +5: "As we need to adapt our doing to the future and its necessities, sustainability is actually the most important topic [!]", verbally undermining the contradiction of having to address sustainability issues but oftentimes not being eligible to do so. P16 legitimised his decision more pragmatically: "*Certain projects simply cannot be sustainably implemented*", hinting as his operational sector within research and development.

As can be seen in this pattern, barriers considered most important towards the implementation of sustainable project management practices are predominantly control-related, more specifically of a project's species and environment it is situated in.

In essence, despite the categorical outcomes of this pattern being not as noteworthy for factor one and factor three, the evaluation of the subclassifications proves that barriers for this type of project managers are of prime control obstacles, making it difficult to be addressed from a personal point of view.

Nonetheless, as the re-integration into the TPB framework will signify, participants reflecting the importance of control barriers, namely beliefs about factors either facilitating or impeding performance of behaviour and its perceived influence (Ajzen, 1991, p. 189), can be optimised to address and maximise sustainable values and functionality within a project, provided by the rationale that factor two respondents did neither judge *Influence & Awareness* nor *Motivation* statements as barriers of the sort.

5.3 Perspective Three - *Motivated Yet Unsupported*

Projects' Natures and *Policies,* both subclassifications of the overall category control beliefs, are the central barriers of this perspective perceived by five out of 28 (17.86%) project managers. Accounting for 6% of explained variance and an Eigenvalue of 1.7148, this

perspective, labelled *motivated yet unsupported,* is emphasised by the strong indicative findings in both the categorical as well as classificational distribution of barriers.

As shown in *Figure 12*, respondents underpin the core challenges of implementing sustainability in projects with control principles (0.4854). As the distinguishing statements for pattern three reveal (*Table 17*), seven out of nine statements showcasing positive average Z-SCRs are amalgamated with control beliefs, compared with merely one behavioural and one normative statement being present within the positive, distinctive statements:

Distinguishing Statements for Pattern 3 ($p < 0.05$; Asterix (*) indicates significance at $p < 0.01$)

Statement #	Statement	Category	Q-Sort Value	Average Z-Score
36	For my projects, no clear environmental issues or impacts have been identified	Control:Policy	5	2.56*
35	I do not experience with sustainable PM practices	Control:Knowledge & Skills	4	1.82*
43	My project is not suitable for green project management practices	Control:Project's Nature	3	1.44*
39	I believe that sustainability is difficult to integrate in the project	Control:Policy	3	1.34*
41	I do not believe that sustainability can be addressed by all project managers in every project	Control:Project's Nature	3	1.32
24	According to the project owner / client, sustainability is not relevant for this project	Normative:Project's Nature	2	0.74*
44	I believe my project is too small to reap the benefits of implementing sustainability	Control:Project's Nature	2	0.65*
7	I am not aware of any environmental risks or impact of my project	Behaviour:Priority & Risk	1	0.34*
4	I perceive implementing sustainability in projects as inconvenient	Behaviour:Motivation	0	0.03*
2	I do not feel motivated to address the topic of sustainability	Behaviour:Motivation	0	-0.07*
27	Stakeholders are not interested in sustainability	Normative:Influence & Awareness	0	-0.34
3	I do not experience a moral or ethical obligation to do so	Behaviour:Motivation	-1	-0.47*
9	I favour traditional PM over new, sustainable practices	Behaviour:Priority & Risk	-2	-0.62
38	Regulations hinder the adoption of sustainable PM practices in my project	Control:Policy	-2	-0.94*
33	The project team lacks the knowledge to understand how sustainability can be implemented in the project	Control:Knowledge & Skills	-2	-0.95*
1	Sustainability does not stimulate me	Behaviour:Motivation	-3	-1.06*
28	I expect to be confronted with negative reactions or feedback about the sustainable PM practices	Normative:Influence & Awareness	-4	-1.22
34	The team does not have the competences to integrate sustainability in the project	Control:Knowledge & Skills	-4	-1.56*

30	The market does not value sustainable project management practices	Normative:Influence & Awareness	-5	-1.94*

Table 17: Distinguishing Statements for Pattern 3

Moreover, it is precisely the top statement which scored the highest positive Z-SCR across all three factors and thus being of the most significant and noteworthy barrier of this study. Statement #36, with a Z-SCR of 2.56 and a remarkable placing on the Q-Grid's +5 position five times amongst all participants (as well as having been placed on values +4 and +3 by nine further respondents), *For my projects, no clear environmental issues or impacts have been identified* (*Control:Policy*) constitutes one of the main barriers for individuals sharing perspective three as well as other project managers of different patterns.

"Because there simply aren't [any]" (P27) and "No clear impacts, [they] do not talk about it at all because they think that it [Ann.: sustainability] has a low impact" (P4) were among the most frequently occurring responses when quizzed as to why statement #36 has been assigned to its respective grid position.

Pronouncement encapsulating this core thinking also surfaces from P24's side: Claiming that sustainability in project management is "not of interest because it will cost more", this respondent further adds that "Nothing really changes in Austria because of the obedience to superiors: You got to keep silent if you want to keep your job", corresponding strongly to additional control statements by vocalising that "Procedures are there to be changed; Everything is possible but it takes the right people [...]; If you think sustainably, the whole project management changes".

Statement #36 is further to be found within the distinguishing statements of factor one (0.94) and hence could be deduced from consensus statements, were it not for perspective two: Contrastingly to the solid results gained from pattern one and three, motivated yet lacking competency factor two participants peculiarly disagree listing statement #36 as a barrier to sustainable project management, scoring the second-lowest placement within factor two's distinguishing statements with a Z-SCR of -1.91.

Such a contradictory outcome will further be scrutinised upon the assessment of other potential influencing variables relating to this thesis' respondents' demographics, such as project management industry.

In line with the above findings, *Project's Nature* and *Policy* show the highest scoring peaks in terms of subclassificational distribution of barriers. As already mentioned, *Figure 13* confirms a 40% representation of barriers related to a project's nature as well as 25% constituting the classification of policy-related hindrances.

An exemplary impulse for the high-scoring statements of said subclassifications is being contributed by P25: "[As sustainability is] enforced top-down, project managers have too little impact and responsibility", along with admitting to the fact that "Sustainable project management heavily depends on the company and often feels somewhat enforced".

Intriguingly, P18 (of pattern one) does not perceive statement #41 *I do not believe that sustainability can be addressed by all project managers in every project* (*Control:Project's Nature*; Z-SCR of 1.32 in pattern three, thus constituting a strong obstacle) as a barrier and instead places it on the complete other end of the spectrum (-5).

P18 commented on it in the following sense: "[It] corresponds to the industry, but in general every project could be sustainable, even as little as possible; It all starts somewhere", and therefore being of opposing opinion in comparison to motivated yet unsupported project managers.

Pattern three, besides exhibiting the strongest positive peak of categorical distribution amongst all factors, additionally displays the highest peak within the factors concerning non-barriers (meaning: peaks to the left), namely *Influence & Awareness* (-0.7401).

Contributing a total of three times to the negative distinguishing statements of factor three, this pattern reveals that project managers who experience control beliefs, specifically those of *Project's*- and *Policy*-related nature, as the biggest barriers.

At the same time, they judge *Influence & Awareness* as no obstacle whatnot. Most prominently disagreeing with statement #30 (*The market does not value sustainable project management practices* [*Normative:Influence & Awareness*]), P19 entirely empowers this potential obstacle by stating that "[Sustainability] is even being pushed by funding agencies" and P24 agreeing that the "market adds the framework".

In this sense, also statement #28 (*I expect to be confronted with negative reactions or feedback about the sustainable project management practices* [*Normative:Influence & Awareness*]) evokes strong emotions and discreditation of being labelled as a barrier.

"Some roll their eyes" (P11), but generally, "it starts with those who want to have something" (P5).

The remaining two peaks of pattern three's subclassificational distribution of non-barriers, *Priority & Risk* (-0.0902) and *Knowledge & Skills* (-0.0122), show no signs of uttermost significance. In contrast to the first two found patterns, motivated yet unsupported project managers constitute the only group sustaining challenges brought upon by motivational beliefs (*Motivation*, Z-SCR of 0.1056).

Bearing in mind the underlying theoretical framework of this thesis, with the TPB proclaiming an individual's intention influences one's acted-upon behaviour (Ajzen, 1991, p. 183), it surfaces that these professionals are indeed influenced, if not hindered, by motivational beliefs when addressing sustainable practices.

To put it in perspective: Statements of motivational nature *do* constitute barriers for individuals of perspective three but do not impose hindrances for motivated yet confined and motivated yet lacking competency project managers.

As to why this is the case, the distinguishing statements shall be further scrutinised: Despite statement #1 scoring strongly negative (Z-SCR of -1.06) and therefore contributing to the left-hand side of the distinguishing statements, two distinctive motivational statements have been judged as composing a barrier: Statement #16 *My project owner or client is not giving me additional incentives/compensation for the extra effort of sustainable practices* (*Normative:Motivation*, Z-SCR of 1.628) and statement #18 *The project team prefers to stick to already-established project management routines* (*Normative:Motivation*, Z-SCR of 1.294).

Regarding the former statement, four participants add to it qualitatively, announcing that "until now, I am not aware of project requirements which would reward sustainable doings on my side [...] the primary goal is scalability" (P6).

The lack of incentives are in accordance with the findings of Ormazabal et al. (2018, p. 164), addressing the lack of financial support, as well as Martens and Carvalho (2016, p. 1095), who listed compensation and lack of incentives as clear barriers.

Project managers of this study provided additional inputs as to why insufficiencies of incentives and/or (monetary) compensation for integrating sustainable project management aspects obtrudes hurdles: P14 remarked that "[Sustainability means] additional work, [it gets] difficult for more achievables; No extra competition [but] more time and energy, more knowledge gathering, [you] need data, talk to more people".

Acknowledging the absence of additional monetary compensation, P21 agrees on the fact that "[For] the topic of sustainability, a bigger budget is required", which is in alignment with P18's viewpoint, pointing at statement #16: "It just is like that, [you] cannot do anything about it. Oftentimes it lacks awareness".

Fairly casual, another comment gives weight to the already mentioned qualitative findings: "I do not get extra points [for integrating sustainability measures] for example if I take the train as opposed to flying or order plant-based catering" (P11).

Summarising, P14 briefly added: "[This is] a big problem - additional effort is not rewarded".

As this sole statement has proven, the findings of this study back up the already academically-sourced notion that the lack of additional compensation does indeed constitute one of the main challenges in need to be addressed by organisations and project owners the like.

With regards to statement #18 (*The project team prefers to stick to already-established project management routines* [*Normative:Motivation*]), one coherent theme emerged amongst the project managers when questioned about it: "Human is a creature of habit" (P11) and "People are accustomed to current happenings, especially in R&D. [We] tried implementing agility and [that was] already challenging. They tend to stick to routines because it is safer and more convenient" (P15) were among common responses.

P10 accentuated his agreeance on the statement but remarked in a rather ironical tone "Agree but I can still enforce it on them (Ann.: the project team). The project and team needs guidelines".

In spite of this thesis not assessing any cultural impacts on barriers to sustainable project management, three of the research participants put force on the cultural setting they are in regarding reluctance to move away from already established routines:

Whilst P24 acknowledges this barrier as being culturally caused ("for example Scandinavians or Chinese think differently"), P22 is cognisant of statement #18 being "more of a geographical and/or age issue".

Alongside "[This is] a typical Austrian understanding and Austrian structures", P18, despite assigning it on the disagreeable non-barrier side, interjects with a cultural justification, stating that "[I placed it] on the negative side because specific sectors require different methods; [In my company] freedom is given, but perhaps that is also an Italian mindset". As such, culturally-inflicted barriers would offer large room for further research, but as of now it shall be of sufficiency having touched upon briefly.

Concludingly, akin to perspective one and two, statements underlying control beliefs do impose challenges on project managers, nevertheless perspective three particularly places great emphasis on both control beliefs as inhibiting sustainability as well as behavioural beliefs being of no obstacle to be overcome (-0.3564). Motivated yet unsupported project managers assess a project's nature and its policies as inevitable barriers to implementing sustainability as part of their practices.

On the contrary, influential and awareness-related issues do not compose a personal hindrance but rather contribute to the non-barrier aspects. Project managers of perspective three encapsulate a strong knowledgeable mentality and awareness of policies and regulations and are firmly focused on addressing administrative and structural barriers regarding environmentally-friendly project management aspects.

5.4 Perspectives & Participants Demographics

The key aspect discussed hereafter accounts for a concise overview of descriptive data of the research participants and will further promote the understanding of the three perspectives of sustainability barriers, allowing for potentially new insights and testing in further research. Based on the full description of *Chapter 3.2.2* P-Set*,* participants' demographics and their detailed factor listings are being extracted and scrutinised in more detail below (*Table 18*), borrowing from the approach used by Silvius et al. (2021, p. 18).

Description of the P-Set detailed by Factor

Question	Answer Categories	Total P-Set	Factor 1	Factor 2	Factor 3	No Factor Loading
Age	18 - 27	32.14%	55.56%	22.22%	11.11%	11.11%
	28 - 37	35.71%	40.00%	10.00%	30.00%	20.00%
	38 - 47	28.57%	37.50%	12.50%	12.50%	37.50%
	48 - 57	3.57%	0.00%	0.00%	0.00%	100.00%
	58 - 67	0.00%	0.00%	0.00%	0.00%	0.00%
	68+	0.00%	0.00%	0.00%	0.00%	0.00%
Gender	Male	50%	35.71%	21.43%	21.43%	21.43%
	Female	50%	50.00%	7.14%	14.29%	28.57%
	Other	0%	0%	0.00%	0.00%	0.00%
	Prefer not to reveal	0%	0%	0.00%	0.00%	0.00%
Project Type (multiple answers allowed)	Building & Construction Public Infrastructure	6.38%	33.33%	0.00%	0.00%	66.67%
	Building & Construction Real Estate	17.02%	62.50%	0.00%	12.50%	25.00%
	Building & Construction Development	4.26%	50.00%	0.00%	0.00%	50.00%
	Organisational Change	14.89%	42.86%	14.29%	28.57%	14.29%
	Information Technology	25.53%	41.67%	16.67%	25.00%	16.67%
	Research & Development	14.89%	42.86%	14.29%	0.00%	42.86%

	Other	17.02%	37.50%	37.50%	12.50%	12.50%
Industry Type (multiple answers allowed)	Agriculture	1.54%	100.00%	0.00%	0.00%	0.00%
	Energy	4.62%	33.33%	33.33%	0.00%	33.33%
	Healthcare	7.69%	20.00%	0.00%	40.00%	40.00%
	Logistics Services	3.08%	50.00%	0.00%	50.00%	0.00%
	Facility & Real Estate	7.69%	40.00%	0.00%	20.00%	40.00%
	HR Services	1.54%	100.00%	0.00%	0.00%	0.00%
	Consulting	7.69%	40.00%	20.00%	20.00%	20.00%
	Education & Training	3.08%	50.00%	0.00%	0.00%	50.00%
	Industry	10.77%	14.29%	14.29%	42.86%	28.57%
	Building & Construction	12.31%	62.50%	0.00%	12.50%	25.00%
	Wholesale & Retail	4.62%	33.33%	33.33%	33.33%	0.00%
	Financial Services	7.69%	40.00%	20.00%	0.00%	40.00%
	Legal Services	1.54%	100.00%	0.00%	0.00%	0.00%
	ICT & Communication	10.77%	42.86%	14.29%	0.00%	42.86%
	Public Administration	4.62%	33.33%	33.33%	0.00%	33.33%
	Other	10.77%	28.57%	14.29%	28.57%	28.57%
Years of Experience in PM	1 - 5	57.14%	43.75%	25.00%	18.75%	12.50%
	5 - 10	17.86%	40.00%	0.00%	20.00%	40.00%
	10 - 20	21.43%	50.00%	0.00%	16.67%	33.33%
	20+	3.57%	0.00%	0.00%	0.00%	100.00%
Project Size	< 1 Mio €	32.14%	33.33%	11.11%	44.44%	11.11%
	1 - 10 Mio €	35.71%	40.00%	30.00%	0.00%	30.00%
	> 10 Mio €	32.14%	55.56%	0.00%	11.11%	33.33%
Sustainability integrated in Company Strategy (*1 - not at all, 5 - to the full extent*)	1	3.57%	0.00%	0.00%	100.00%	0.00%
	2	7.14%	33.33%	33.33%	16.67%	16.67%
	3	10.71%	33.33%	8.33%	16.67%	41.67%
	4	14.29%	71.43%	0.00%	14.29%	14.29%
	5	17.86%	50.00%	50.00%	0.00%	0.00%

Table 18: Description of the P-Set detailed by Factor

5.4.1 Age

A first observation can be drawn from the categorisation "Age". This grouping reveals that the majority of research participants is evenly distributed across the factors regardless of age. Factor one, nonetheless, discloses a slight imbalance in the sense that most project managers (55.56%) aged between 18 to 27 share this perspective, as opposed to an average age group distribution of 14.91% (factor two) and 17.87% (factor three). This shall come as no astounding result, as the motivated yet confined respondents are of the youngest participating group. Especially as future global and local focus of sustainability and project management is expected to be led by upcoming generations, there is a growing

acknowledgement among young(er) project managers of the contribution of an individual's sustainable practices towards environmental issues and overcoming potential barriers by finding adequate solutions (Dimitrova et al., 2021, p. 1).

P23, also belonging to the age group of 18 - 27 years, mentions a certain "generational change" within his industry, in particular among peers within the same age range: "The awareness is there, but it is difficult and costly [to implement sustainability]". With regards to statement #42 (*It is too difficult to align the project with sustainability goals or objectives* [*Control:Project's Nature*]), he notes that in principal, the alignment would not be difficult, but the difficulty consists of getting people (of older generations) on board.

P22, also to be found within the same age group, states alongside statement #18 (*The project team prefers to stick to already-established project management routines* [*Normative:Motivation*]), that this would be "more of an age issue".

P17, aged 20 and therefore among the youngest participants of this study, further declares that "I even wrote my high school degree dissertation on sustainability, and so did others in my class".

5.4.2 Gender

Regarding gender, no impactful outcomes ought to be presented. A slight overrepresentation in factor one is due to the fact that said perspective is shared by a higher number of respondents (12) as compared to factor two (4), factor three (5) and no loading (7).

5.4.3 Project Type

Coinciding with the project managers' type of projects they operate in, factor one as well as factor three are not represented by a high percentage of one dominating group of projects. Factor two, on the contrary, is not comprised of any business professionals hailing from a building and construction background, a project type fully present in factor one and to some extent in factor three.

A possible explanation as to why building and construction project managers do not correspond to the motivated yet lacking competency perspective can be sourced from the qualitative findings of this study: "Sustainability will be more relevant in the future" (P1); "There is a want for sustainability [and it is] as easy as [it is] possible: For future generations, it should be accessible" (P5); "Especially construction allows for addressing sustainability" (P17); "[In our industry] sustainability does not impose risks per se, it is only more costly" (P22); "I am fully aware of all my responsibilities [regarding sustainable implementations]"

(P23) and "As we need to adapt our doings to the future and necessities, sustainability is actually the most important topic!" (P26).

All the above cited quotations stem from building and construction project managers and indicate a strong antagonism of perspective two. Although Q-Methodology does neither aim nor allow for generalisations of a particular participant's group or industry, the findings convey the clear meaning of building and construction project managers constituting the opposite of lacking competency and therefore do not perceive knowledge and skills-related issues as a barrier to sustainability, as do project managers of perspective two.

5.4.4 Industry Type

Shifting away from a project's type to the industry itself, all industries available for selection in the "Participant Information" (Appendix A) are present in the overall P-Set. *Agriculture, HR Services* and *Legal* only correspond to factor one; However, participants of said industries also operate in others and are thus not indicative for given industries at hand.

Factor one does exhibit a slight overrepresentation of project managers from the *Building & Construction* industry, which is best argued with simultaneously showcasing the highest frequency (eight out of 28 project managers) in the entirety of the P-Set.

Due to the reason of only four factor loadings, pattern two is not represented by all industries. However, this gives a clearer picture with regards to where motivated yet lacking competency project managers are most prominently in charge of: *Energy, Wholesale & Retail* as well as *Public Administration* show a tendency of experiencing *Knowledge & Skills*-related obstacles and listing their *Project's Nature* as one of the main barriers towards the integration of sustainability.

Public Administration, for instance, did not score on perspective three (motivated yet unsupported), with respondents addressing the difficulty of implementing sustainable project management in practice:

"Statement #31 [Ann.: *Sustainability is too complex and not practical enough to apply in the project*; {*Control:Knowledge & Skills*}] is one of the main obstacles, all projects are collaborative yet there is no scalability internationally".

P16, representative of his industry, additionally ends the sorting process with a strongly lingering assertion, stating that "Sustainability is the first thing to be criticised and the first thing to be dropped".

P15 from the *Energy* sector acknowledges that "on the one hand, regulations ought to be enforced", but admits to "because of the law, these regulations are at the same time restraining". Said respondent also reflects on the fact that not enough sustainable project management practices are made public, and that "knowledge transfer mainly occurs through university, [in our] company workshops [there is] no sustainability at all".

Also, with regards to *Knowledge & Skills* barriers and from the same industry as P15, P13 says "there are two to three sustainability goals which I simply have to fulfil, but the team needs more workshops and knowledge transfer".

P2 of the *Wholesale & Retail* industry sums up a priority-related barrier in his sector equitably: "In the procurement area, having as [a] main task to manage (quotate, buy and fulfil) a product portfolio and having the intention of implementing sustainability, [this] would be translated to reassess [the] quality-price of the actual suppliers, (...) as a result the halt of the supply chain".

The practicality of implementing sustainable project management practices to realise business-relevant objectives is still subject to ubiquitousness (Sabini et al., 2019, p. 821), insufficient exposure to practices within one's industry (Sinxadi & Awuzie, 2021, p. 5) and the interplay between hard barriers, for instance information management systems, and soft barriers, such as the lack of motivation and skills of the project managers themselves (Ormazabal et al., 2018, p. 164).

As these outcomes of barriers regarding certain industries and their shared commonalities indicate, the findings of this study go hand in hand with what has been stated in the initial literature review plus adds a new layer of in-depth understanding by providing empirically validated grounds for further discussion.

5.4.5 Years of Experience in Project Management

Factor one is balanced evenly, suggesting that motivated yet confined respondents share common perspectives regardless of their operating years as project managers. Similar can be argued with regards to motivated yet unsupported project managers.

In factor two, motivated yet lacking competency individuals of this pattern all have in common the least number of working years as project managers, namely between one to five years. Additionally, 50% of the factor loadings derive from respondents being aged 18 to 27.

This could be indicative as to why project managers of this perspective are uneasy and lack competency but does not explain as to why they feel rather indifferent when it comes to

integrating sustainability, also keeping in mind that the youngest age group scored comparatively high on willingness.

Another argument diverging from the insightfulness of this outcome is the arbitrariness of other respondents' factor loadings: One project manager with 20+ working years in the field of project management did not load significantly on *any* of the factors, whereas those with working years of five to 20 years scored either on perspective one, perspective three or no loading at all. In fact, the average percentage of years of experience in project management of the three factors plus no loading results in 25%, therefore no relation between working experience and project managers' motivations and personal barriers faced can be concluded with.

5.4.6 Project Size

The total P-Set scored almost perfectly even across the answer categories (<1 Mio €: 32.14%; 1 - 10 Mio €: 35.71%; > 10 Mio €: 32.14%).

In factor one, project managers largely inhibited by barriers of normative and *Policy*-related nature, project size does not appear to be of an issue at hand, with all respective answer categories being balanced.

Factor two is not comprised of project sizes with a volume larger than 10 million €. The majority (75%) of control and *Project's Nature/Knowledge & Risk* inhibited project managers operates within 1 - 10 million € projects. Due to the small number of factor loadings on this factor, the size of the project does not reveal any noteworthy results, as control-related barriers scored also comparatively high in the remaining two factors. There, projects of a volume of more than 10 million € have taken place also.

Contrastingly, pattern three does not include any projects between 1 - 10 million €. Motivated yet unsupported project managers, facing primarily *Policy* and *Project's Nature* obstacles, appear to be working in comparatively smaller-scale projects (<1 Mio €) or larger-scale projects (> 10 Mio €).

This indifference of an outcome strengthens the argument of Sinxadi and Awuzie (2021), by highlighting the full commitment in projects in order to ensure sustainability regardless of a project's size monetary wise (p. 5).

5.4.7 Sustainability Integrated in the Company's Strategy

The response of the project managers when quizzed about their subjective understanding as to which extent - if any - sustainability is integrated in their firm's strategy is as follows:

Not a single project manager of perspective one is of the opinion that the organisation he/she is working for does not include sustainable practices even to a certain degree. In fact, the eagerness of the individuals is reflected in their working situation, with pattern one scoring the highest (71.43%) amongst all patterns on value 4 (with 5 reflecting a full integration of sustainability). Albeit only one participant ticking value number 5, the previous findings of this perspective - the utter willingness and fundamental motivation of project managers belonging to this pattern - stresses the importance of external influencing factors and hence argues in favour of the strong inclination towards normative barriers experienced by these individuals. Serving as a contributing determinant for a project manager's perception, external matters are directly translated to self-imposed motivation (Barneveld & Silvius, 2022, p. 8).

To simplify: The high scoring of integrative organisational sustainability is in alignment with the high intrinsically motivation of individuals working in said setting. Nonetheless, as the evaluation has proven, high sustainable integration does not automatically result in fewer perceived barriers: Participants sharing perspective one are predominantly inhibited by *Policy*-related barriers, a normative belief competing at high stakes with the non-barrier constituting behavioural beliefs.

Factor two captures the discernment of the indifferent yet equipped perspective in an unforeseen manner: Three of the respondents parallel the notion of a fairly passive and detached view on sustainability by rating their company's sustainability responsiveness on the lower end of the scale (two on value 2, one on value 3). Intriguingly, respondent P13, whose loading on factor two is of quite significance (0.4347), perceives the sustainable integration in his firm as fully present (value 5).

At first glance one might assume contradictory point of views, but an in-depth look might explain the underlying premise: Having been labelled as feeling indifferent regarding sustainable project management practices and showing low scoring with regards to individual affiliation, one shall not neglect the prime barriers endured by these respondents, first and foremost *Project's Nature* as well as *Knowledge & Skills* obstacles.

By believing that *Sustainable Project Management is only aimed at large(r), impactful projects* (Statement #12, *Behaviour:Project's Nature,* Z-SCR of 1.56) and *My project is too small to reap the benefits of implementing sustainability* (Statement #44, *Control:Project's Nature,* Z-SCR of 2.13), the reluctantness might arise from a combination of behaviour, normative and control anticipation of obstacles in the first place.

Nevertheless, despite an organisation's effort to incorporate sustainability holistically, in practice it might not reach all departments equally. As a closing argument by P13, working in the energy and industry sector, he verbally ensured the author of this thesis the fierce project management practices with clearly-defined sustainability goals (thus justifying his placement on value 5), but also admits to the fact that "I am completely satisfied with the practices" - once again signalling the indifference of moving towards new methods of integrating sustainable methods - "but also current practices offer a lot of advancements", not further commenting on whether he believes that their behavioural intention is fixated on bringing upon change or remaining at business as usual.

On a last note, perspective three also comes up with notable results. As project managers sharing the perception of not lacking awareness and influence, but instead experiencing barriers due to control beliefs, this group discloses precisely one individual out of the entire P-Set who perceives sustainability integration of his company as non-existent.

Arguably, this pattern is emphasised by chief barriers of controlling nature, with the lack of environmental aspects, impacts and applications at front, but also is put to a disadvantage due to behaviour inflicted obstacles despite being fully aware of the market's needs. Nevertheless, the remaining motivated yet unsupported project managers do indeed perceive sustainability integration as somewhat given (an average scoring of 3), therefore it is best argued that P2 shall be treated as an outlier in this respect.

As it stands present, the results show that the empirically-sourced subjective patterns of perceived hindrances are subject to project managers' individual behaviour, normative and control beliefs. Nonetheless, certain participant demographics, such as age and industry typification, do contribute to the findings in remarkable means.

Chapter 6 Conclusion, Reflections and Limitations will once again come to speak of the respondents' backgrounds and ushers suggestions for ensuing and enriching research.

5.5 Perspectives & The Theory of Planned Behaviour

The previous subchapters evaluated and showed the contributing factors towards perceived barriers of project managers towards sustainable enactments. By elucidating distinguishing as well as consensus statements paired with participants' demographics and insights of qualitative nature, the final contributing step of this thesis will be the re-integration and assessment of the findings in alignment with the Theory of Planned Behaviour.

Referring to *Chapter 3.2.1* Q-Sample*,* the author of this paper purposively selected literature-sourced statements eligible for assignment in one of the three belief-categories (behaviour, normative, control). At the heart of the elementary theoretical framework are the resulting attitudes towards behaviour (*behaviour*), subjective norms (*normative*) as well as perceived behavioural controls (*control*), culminating final intentions directly affecting the behaviour of project managers (Ajzen, 1991, p. 182).

It is beyond the scope of this thesis to list which sustainability criteria are present, or which sustainable management practices are at hand for numerous industries or to give advice on how to overcome certain obstacles. Nevertheless, the core principles of assessing *subjectively perceived* barriers within project management backed by theoretical relevance deliver an important contribution towards changing behaviour.

"Sustainable project management needs to be substantiated in actions and behaviour that consider sustainability, otherwise nothing will happen" (Silvius, 2019, p. 107) may as well stand on its own. But by taking this quote as a starting point and adding substance to it, sustainability in behaviour will take on new forms in the following chapter.

Sustainability efforts in projects chiefly depend on the extent to which project managers themselves embrace the willingness to drive forward implementation and reinforcement (Priyankara et al., 2018, p. 2).

Different value orientations are of further relevancy, not only for active engagement, but also for prime comprehension of environmentally-related beliefs and intentions (de Groot & Steg, 2008, p. 330).

Thus, according to the TPB, performing behaviour (here: the practice of sustainable project management methods by overcoming perceived barriers) shall be able to be predicted based on intentions. Intentions, yet again, are subject to behaviour, normative and control beliefs of individuals (Ajzen, 2011, p. 1119).

5.5.1 Behavioural Beliefs

The analysis of the category-grouped statements shows that project managers endure an array of dissimilar barriers when confronted with sustainability implementation (Sabini & Alderman, 2021, p. 387).

Obtained outcomes convey the fundamental message that in neither of the three perspectives, behavioural beliefs seem to constitute a barrier towards sustainable enactments in project management. As a rule of thumb, the stronger a certain belief, the stronger an individual's intent to act upon a particular behaviour (Marnewick et al., 2019, p. 4).

Statement #13 *I believe that for the type of projects I manage, considering sustainability unnecessarily increases the cost* (*Behaviour:Project's Nature*), with participants having justified as "if you need to do it [Ann.: implement sustainable practices] you need to deal with extra costs" (P25) or "not unnecessary, but still an increase" (P17), comprises a notable exception in terms of agreement.

Besides, behavioural beliefs of this study are highly in favour of not constituting any barriers of the like and thus are synonymous for favourable outcomes of sustainability-integrative behaviour. Consequently, as behavioural beliefs presuppose a forthbringing of favourable or unfavourable attitude towards behaviours (Marnewick et al., 2019, p. 4), the motivationally primed statements can be taken as a point of reference to foster integration and act upon them accordingly.

As demonstrated, motivated yet confined project managers dominate the subjective perspectives of this study, signifying the strong potential which lays among inherently self-inspired business professionals. Marnewick et al. (2019) confirmed just stated notion, agreeing with the conception that intrinsically-motivated project managers ensure higher chances for better incorporation of sustainability-related aspects (p. 11).

As demonstrated, behavioural intentions indicate readiness of performing certain behaviours (Ajzen, 2011, p. 1122). Further, through the identification of which motivational statements function as, in this case non-barriers, they refer to an inducement to pursue an activity due to the match between project managers' individual values and beliefs. In practice, understanding the viewpoints of project managers with regards to behavioural beliefs therefore allows for predicting environmental behaviour and the probable influence it has on intentions and behaviour (Priyankara et al., 2018, p. 5).

It is apparent that the relation between sustainability and project management is of certain novelty and an emerging field of study (Silvius & Schipper, 2015, p. 17), but by

leveraging on behavioural beliefs, pursuing sustainable objectives will enrich the conventional project management practices by measuring additional possible economic outcomes. As identified, the connection of sustainability-related open-mindedness of motivated yet confined, the slight incertitude of motivated yet lacking competency as well as the motivated yet unsupported project managers can run up against barriers and hindrances, if turned to positive accounts appropriately (Sabini & Alderman, 2021, p. 387).

5.5.2 Normative Beliefs

The definition of normative beliefs presupposes the likelihood of external approval or disapproval directly influencing an individual's performing behaviour, caused by subjective norms intermingling with intentions and actions (Ajzen, 1991, p. 195).

Findings of perspective one are consistent with salient beliefs that normatively-primed statements do, in fact, conflict with personal attitudes and therefore constitute barriers of the like. Drawing nearer to the cause of these obstacles, it predicts a requirement for alternative strategies to circumvent the problem of desired and intrinsically motivated sustainability outcomes by project managers and externally, socially imposed hindrances (Sabini & Alderman, 2021, p. 387).

With regard to Priyankara et al. (2018), the authors argue that norms refer to "what is done and what ought to be done" (p. 6), focusing on the linkage between norms and corresponding behaviour. Henceforth, the sole perception of what is expected within a social or organisational setting influences how people behave (Priyankara et al., 2018, p. 7).

Normative beliefs impose barriers on motivated yet confined project managers. In spite of the predication that the impact of social influence will diminish over time once a project manager's conversance and cognition becomes deeper (Yuan et al., 2019, p. 12), if these barriers remain unaddressed, subjectively inflicted norms will come into play regarding acted-upon behaviour.

Motivated yet lacking competency as well as motivated yet unsupported project managers generally do not perceive normative beliefs as an obstacle towards sustainable project management. The explanation lies in their principal attitudes of not being knowledgeable of sustainability anyhow (perspective two) or simply lacking supporting mechanisms there like (perspective three). As such, externalities and socially constructed expectations appear weaker as social influence paired with individual indifference enfeebling them (Yuan et al., 2019, p. 12). The challenging factors of subjective norms are specific to

wilful project managers but do not primarily confine respondents of the remaining two patterns.

This raises the question how barriers at an institutional, external level can be lessened to guide project managers behaviour to a deliberate emphasis on sustainability, with a strong focus on diminishing obstacles for perspective one individuals and simultaneously urging perceived indifferences of perspective two and three project managers to identify and assess opportunities (Bocken & Geradts, 2020, p. 6).

To conclude, whilst certain normative beliefs do inhibit project managers of at least two out of the three perspectives, the predominant research focus on organisational, external-related barriers inhibiting project managers (for instance Bakos et al., 2020; Caldera et al., 2019; Clark & Holliday, 2006; Kivilä et al., 2017) does not accurately depict recent reality, as greater attention to sustainability-related behaviour ought to be given to attitudes towards behaviour and perceived behavioural control. Whilst they certainly contribute to affecting intentions and in turn behaviour, predicting behaviour regarding subjectively perceived barriers and how to overcome them solely based on subjective norms overstates the ability of merely one of the influencing components underlying the TPB.

5.5.3 Control Beliefs

Control beliefs, a grouping dealing with the presence or absence of required resources, opportunities, knowledge and applications, is among the beliefs ultimately determining intention and performed action. With this thesis' Q-Sorts incorporating an array of controlling, and hence perceived behavioural controlling statements, these beliefs may be based on past experiences (corresponding to *Knowledge & Skills*), second-hand information (such as *Influence & Awareness* and *Priority & Risk*) or other factors causing impeding issues. Inevitably, the fewer resources and opportunities project managers can avail themselves of, the more barriers they face and the smaller perceived control over behaviour is provided for (Ajzen, 1991, p. 196).

In some cases, project managers lack common knowledge and understanding concerning environmentally-friendly practices (pattern one). Others perceive unsuitability as a main obstacle (pattern two), whereas again others (pattern three) perceive control belief-related barriers as fundamentally inhibiting regardless its origin. All three patterns display strong impediments to those beliefs, unequivocally influencing their intentions and actions (Williams & Dair, 2007, p. 144).

Motivated yet confined project managers are hindered by controlling matters the least, but still experience drawbacks in that regard. By granting special attention to knowledge and experience related barriers, prediction of behaviour surmises promising development: Shrinking the impact of these subjectively perceived barriers allows for explaining short-term behavioural intentions (Ajzen, 2011, p. 1115) by targeting knowledge and application of success-related hindrances at its core, supportively impacting perceived behavioural control regarding pro-environmental behaviour (Priyankara et al., 2018, p. 13).

Motivated yet lacking competency alongside motivated yet unsupported project managers perceive control beliefs among the greatest inhibitors towards integrating sustainability. As *Figure 12* deepens the understanding of which statements principally account for the strongest barriers, these two perspectives are at risk of developing an opposing mindset to perspective one project managers, as suitable applications of sustainability are majorly driven by hindered intentions, resulting in unperformed behaviour.

The prediction of this set of beliefs being of opposing nature is in conjunction with findings presented in the literature review, including scarceness of exposure to sustainable methods (Sinxadi & Awuzie, 2021, p. 5), lack of missing practices and adequate experience amongst team members (De Graft et al., 2019, p. 294) as well as the high degree of effort and complexity of engaging stakeholders (Armenia et al., 2019, p. 10).

Challenging the non-barriers of behavioural and normative beliefs with even stronger control belief barriers, all three patterns concern the nature of the projects fitting sustainability, their impact on the projects and/or adequate experience and knowledge as a driving force for not mitigating alleviating environmental pressures and concerns. This calls for a rethinking of facilitating the support by lessening the barriers of perceived behavioural control (Poon & Silvius, 2019, p. 105).

In short, by adhering to the requirements of amplifying resources and opportunities of project managers they believe in possessing, control-related barriers for project managers of all three perspectives are bound to decrease (Ajzen, 1991, p. 196).

6 Conclusion, Reflections and Limitations

"Exploring Different Subjective Patterns of Perceived Barriers by Project Managers in the Face of Sustainable Project Management" shows that there are three distinctive perspectives among project managers concerning hindrances upon the implementation of environmentally-friendly practices. As has been brought forward in the literature findings, nowadays' focus on sustainable project management is predominantly concerned with the elucidation of organisational and external barriers as opposed to perceived obstacles of project managers themselves.

Answering the research question of *What different subjective patterns of barriers to adoption of sustainable project management (practices) do project managers experience?,* the rationale of this thesis has been illuminating these perspectives based on personal belief-inflicted behaviour. Thus, by recognising the need to pinpoint influencing beliefs on their attitudes, perceptions and intentions, this study contributes to current literature by having embarked on a new stream of sustainability-related contribution and tackling the gap at present.

This paper avails itself of in-depth mixed research method and presents quantitative findings enriched by qualitative relevancy. Despite this research methodology not allowing for broad generalisations, the discovery of real-life occurring barriers amidst project managers, tentative suggestions for a certain set of business professionals concerning priorities for action can be drawn. Results seek to give guidance towards successful integration of sustainability related project management applications.

Unveiling a comprehensive overview of three distinctive perspectives and its core hindrances, the thesis additionally highlights a more thorough categorisation of barriers: As a second avenue, subclassifications disclose the fundamental and practical barriers faced, substantiating the quantitatively-sourced outcomes by qualitative inputs of the participants themselves and hence being not only of academical relevancy, but also suitable for real-life solicitation.

As a theoretical contribution, this master thesis dispenses an accumulation of barriers to sustainability according to extant literature and providing additional insights at the linkage to perceived subjective patterns of sustainability and project management (Martens & Carvalho, 2017, p. 1099).

The analysis contributed to the identification of three distinctive patterns:

Despite business professionals of the first pattern, *motivated yet confined*, declaring willingness to act upon sustainable principles due to high sustainable stimulation and strong ardour to emerging project management methods, normative barriers, primarily of regulatory nature, comprise the strongest blockades.

Perspective two encapsulates *motivated yet lacking competency* project managers with a slight indicative hindering aversion to address sustainability at front and perceived inconvenience as such. Indicators of feeling overwhelmed and questioning their projects suitability per se, these barriers are anticipated to inhibit actual actions if not addressed properly.

Insufficient experience, inadequacy of impactful methods as well as the complexity of integrating sustainable practices into their projects confine *motivated yet unsupported* project managers of perspective three. Predictions of these hurdles allow for a surpassing by acknowledging the deficiencies at hand and rendering supporting structures with sustainability at heart.

Nonetheless, results are closed with a caveat. The identification of the three perspectives does not claim consistency of individuals over periods of time or generalisations in a wider context (Williams & Dair, 2007, p. 145), as expressions of attitudes or personality traits tend to change and thus simply constitute vantage points at present. As a consequence, according to Watts and Stenner (2005) "*Who* said what about X?" matters less than "What is currently *said* about X?" (p. 86). As such, in spite of the study yielding valuable contributions, it also unveils four key limitations, which shall be mentioned thereafter.

Firstly, although the purposeful sampling and selection of research participants occurred to the author's best intention and granting anonymous rights, respondents' point of references and state of beings could not be fully controlled for. The elucidation of perspectives is merely a snapshot of the participants' views whilst factual applications and outcomes were not further questioned. The fact that the model in use does not account for all variances might be due to subconscious factors (Silvius & de Graaf, 2019, p. 1239). Nevertheless, the limitational factor of subjective perspectives leading to generical application to sustainability approaches is something to deal with as given.

Adding to that, the involvement of practitioners primarily of Austrian residency might lead to similar perspectives found outside of Austria, although dissimilarities are not out of question. Another restriction despite the geographical location is presented by the limited percentage of participants' projects taking place in certain industries, resulting in an

underrepresentation of some, such as the *Agricultural* or *Legal* sector, and a slight overrepresentation of others, for instance *Building and Construction* or *ICT and Communication*. For generalisation purposes, a replication of the study in other countries or regions and a balanced depiction of multiple industrial sectors is advisable (Priyankara et al., 2018, p. 16).

As it stands present, barriers of multiple classifications can be limiting to project managers when adapting sustainable practices. Despite employing an underlying theoretical construct, the researcher of this thesis reserves herself the right in having justified the selection of the TPB framework earlier on, but by no means accounts for full pledge of correctness. Any other existing theoretical framework, when proven to be reasonable, can be of substantial contribution. To overcome this limitation, a replication of the study can be run using other suitable theoretical frameworks with results allowing for comparisons thereafter.

Next, the subclassification of the Q-Statements is subject to the author's own interpretation and does not vouch for uttermost comprehensiveness. As barriers to sustainability can be of manifold origin, the restrictive selection of six subclassifications might be improved by broadening and taking in supplementary subgroupings as to finetune even more. By the same token, the statements themselves neither consider project managers' backgrounds nor project settings (Suprapto et al., 2015, p. 679), a limiting factor which might be addressed in further research by systematically establishing a research design focusing on peculiarities of the research participants.

Further research allows for the replication of this study with the same research question but a designated focus on certain industries, project types or specific participant characteristics, such as the correlation and comparison of factors against age or years of experience. Especially the determination of the industry leads to different reactions, as sustainability commonly reflects a company's strategy (Bakos et al., 2020, p. 1292), seldomly determined by the project itself, as empirical data suggests. Research participants of this study additionally called for "more industry-specific" (P25) and "more business-case related" (P10) aspects.

It further appears that the weight given to the importance of sustainability highly depends on thinking patterns of the individuals themselves, therefore raising the question as to which extent personal attitudes can contribute to the adoption of environmentally-friendly practices when obstacles will remain unaddressed by those in power.

Based on Q-Methodology and embedded in the Theory of Planned Behaviour framework, the findings confirm that project managers are indeed impeded by distinctive barriers according to their assignment to one of the three perspectives. This proves to be in alignment postulated by previous research papers, for instance Yuan et al. (2019) arriving at the conclusion that "attitude significantly affects behavioural intention" (p. 15) as well as "attitude being coupled with the underlying sense [...] in approaching the task of sustainability" (McLean & Borén, 2015, p. 1497).

Reflecting on the groundworks of this work, the influence of behavioural, normative and control beliefs on performed actions can be used as a starting point suggesting further research on how to avail oneself of these insights as to diminish the effect of perceived barriers on project managers. Further, a thorough look at correlation blockages and the actual effects barriers have on a project's end result highlight a gap in research yet to be filled.

By employing this research strategy, several benefits are generated, such as forcing respondents to clarify their judgements in relation to an all-encompassing term like sustainability. The strength at hand is the determination of coherent views independently shared by others of the same profession but still signalling the fact that different perspectives *do* exist and what might be obstacles for one group of project managers might be of insignificance to others (Gijzel et al., 2020, p. 14).

Follow-up research is advised to focus on testing the generalisability of barriers identified and how strategies can aid personal beliefs to overcome them (Williams & Dair, 2007, p. 146).

As pointed out by Singh et al. (2012, p. 297) and Hörmandinger (2005, p. 190), measures implying behavioural intention and change demand more attention, both in academia and in the professional area.

Barriers to sustainability in project management are manifold. Due to behavioural, normative or control beliefs, obstacles vary from perspective to perspective. Therefore, guidance in sustainable project management is needed, including a requirement for tackling subjectively perceived barriers as such. With the revealing of a series of barriers sourced through academical literature, various applications in different sectors or different professions are provided and longed for in this respect.

Concludingly and as identified from the project managers' qualitative inputs (Appendix C), each project bring upon relevancy towards an increase in the necessity of sustainable projects (Borg et al., 2020, p. 13).

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9 Appendix A

Participant Information

Master Thesis Research Topic:

Exploring Different Subjective Patterns of Perceived Barriers by Project Managers in the face of Sustainable Project Management

This serves as an invitation to take part in a research study about perceived sustainability barriers in project management as part of this master thesis at Lauder Business School. Please fill out the following details about yourself in a truthful manner. Should you wish to remain anonymous, please state this to the researcher at the beginning of the study. If so, only the empirically sourced data will be processed further, not your personal information.

Name: _____

Age: ☐ 18 - 27 ☐ 28 - 37 ☐ 38 - 47
☐ 48 - 57 ☐ 58 - 67 ☐ 68+

Gender: ☐ Male ☐ Female ☐ Other ☐ Prefer not to reveal

Job Title: _____

What type of project do you usually work in? *Multiple answers are possible*

☐ Building & Construction Public Infrastructure

☐ Building & Construction Real Estate

☐ Building & Construction Development

☐ Organisational Change

☐ Information Technology

☐ Research & Development

☐ Other *Please specify*: _____

In what industry do these projects mostly take place? *Multiple answers are possible*

☐ Agriculture ☐ Industry

☐ Energy ☐ Building & Construction

☐ Healthcare ☐ Wholesale & Retail

☐ Logistic Services ☐ Financial Services

☐ Facility & Real Estate ☐ Legal Services

	☐ HR Services	☐ ICT & Communication
	☐ Consulting	☐ Public Administration
	☐ Education & Training	☐ Other
		Please specify: _____
Years of Experience in PM:	☐ 1 - 5	☐ 5 - 10 ☐ 10 - 20 ☐ 20+
Project Size:	☐ <1 Mio €	☐ 1-10 Mio € ☐ >10 Mio €

How well, to your own understanding, is sustainability integrated in the strategy of your employing company? *Please tick (1 - not at all; 5 - to the full extent)*

1	2	3	4	5
○	○	○	○	○

Your participation is voluntary, and you may change your mind about being involved or request to remain anonymous. You are free to withdraw at any given time throughout the study without stating a specific reason. Once you have finished the quantitative section (assignment of the statements, which the researcher will explain to you orally), a few questions will be asked at the end, whereas the researcher will take notes in written form.

_____ _____

Date and Place Signature

10 Appendix B

Post-Study Questions

Master Thesis Research Topic:

Exploring Different Subjective Patterns of Perceived Barriers by Project Managers in the face of Sustainable Project Management

1) Out of which reason did you assign your chosen statement to the value of -5?

2) Out of which reason did you assign your chosen statement to the value of +5?

3) In your opinion, were there any statements missing in the Q-Set?

If so, which ones would you have wished to be incorporated?

4) Any closing remarks, thoughts, things left unsaid?

I hereby consent to the use of my data to form a part of the thesis for Lauder Business School.

I wish to receive a copy of the final thesis (estimated to be completed by July 2022), which will be provided to me as an electronic copy: ☐ Yes ☐ No

If yes, please state your E-Mail address: _____

_____ _____

Date and Place Signature

11 Appendix C

Qualitative Findings based on the Participant Information Record

P#	Remarks on Value -5	Remarks on +5
P1	Sustainability will be even more relevant in future	Fear from new tasks and more work
P2	There are not any type of regulations/laws that influence the decision of not implementing sustainability measures inside the projects. It is an internal decision based on how important it is for the client requirements on each specific product ordered.	In the procurement area, having as a main task to manage (quotate, buy and fulfill) a product portfolio and having the intention of implementing sustainability would be translated to reassess quality-price of the actual suppliers, having as a result the halt of the supply chain
P3	I believe my project is too small to reap the benefits of implementing sustainability	According to the project owner sustainability is not relevant
P4	That is the statement that is least truthful, it's about ME. Also the context matters: Crucial for me on a personal level, power over my own feelings	No clear impacts, do not talk about it at all (because they think it has a low impact)
P5	Emotionally justified, because P5's organisational clients give the direction: WANT for sustainability but as easy as possible. Global research but also regional; Resource distribution, For future generations: for many accessible, starts with products/resource usage/employees; Clients serve as engine	Instantly assigned due to emotions, who defines project brief defines goals; If sustainability not included, top-down approach -> Only way to incorporate it in entire project; "better than previous ones"
P6	I experience a moral obligation to operate sustainably (or to apply it in the project) as long as I manage to understand the possibilities of my own room for manoeuvre	Until now I am not aware of project requirements which would reward sustainable doings on my side; The primary goal is scalibility
P7	It depends, project at hand and opportunities to be implemented	Completely agree, especially by looking at the nature, irrelevant (insurance sector)
P8	If PM has competences: to integrate, project initiator	Tegarding IT (if requirements then I'll do it); P8 works for a Chinese company because different mindset (way more open)
P9	This is because I think that the sustainability should be an important factor of each project. In my opinion it is necessary to take into consideration the social, environmental and administrative aspects of a project, not just the economic ones	I think that the projects that I am leading right now are "healthy" for the environment, as they are saving important resources, like paper for example; As everything is happening on the laptop, no other essential resources for the environment are used, expect the electricity
P10	Because as a PM you have to be open-minded, think of projects and its processes (ie. you built a house differently than code a software); Be strong and adaptive	I am always the first one to be called for renovation projects (tear down), let us say I am morally flexible
P11	At first sure that it would be #43 but then immediately put #2 there; "I work in a field entirely dedicated to this topic"	I try to implement sustainable practices without overthinking but still would change a thing or two; within the realm of possibility (already above average)
P12	Simply totally disagree (master in Sweden "leadership in sustainability" because in Italy not enough information, curious and intrinsically motivated; incorporated sustainability in work practices, in Italy culturally opposite (ie. Swedish legislation heavily promotes sustainable actions); Slow progress in Italy	Passionate about topic but in banking sector opposing views; Now due to regulations slow process, Nowadays P12 is considered an expert whereas few years ago nobody cared; Forced proactivity; In his/her company special focus on profits and repuatation than trying to introduce sustainability strategies; Pressure from EU to implement sustainability
P13	Because P13's organisational PM practices with clearly-defined sustainability goals	Completely satisfied, maybe also because current practices offer a lot of advancements; Different clients: individually adaptable

P14	ie. Automotive industry, Supply Chain: There are lots of green aspects, but ask yourself "How much greenness is achievable?", Concept is great but implementation? Not so much, opposing direction	Additional work - difficult for more achievables, No extra competition, More time and energy, More knowledge gathering, Need data, Talk to more people, No clue about measuring sustainability
P15	Effect is a lot but it needs to be done, P15 is doing software projects: Sustainability is not the main focus; Technology incorporates new sustainability features	People are accustomed to current happenings, especially in R&D; P15 tried implementing agilility and said it is already challenging, tend to stick to routines because it is safer and more convenient
P16	I do feel motivated to use sustainability as an argument to deal with future consequences	Certain projects simply *cannot* be sustainably implemented
P17	Because P17's firm specifically focuses on sustainability; P17 wrote Diplomarbeit about sustainability	Responsibility mainly on clients but also on own company; Project managers do have influence but are still confined to the head of the firm
P18	Corresponds to industry but in general EVERY project could be sustainable, even as little as possible; It all starts somewhere (ie. electronic bills; sustainable paper)	It just is like that; Cannot do anything about it; oftentimes it lacks awareness
P19	Pushed by funding agencies	Because if it is wished by client you simply do it, even though the project manager might not be personally motivated, "Macht liegt beim Kunden"
P20	It is what it is	Pretty content, no incentives to change anything (already process-oriented)
P21	In construction industry size does not matter	#13 economical values -> sustainability, For the topic of sustainability a bigger budget is required
P22	Not a risk per se, only more costly	Simply not too high of a priority in our company (more monetary)
P23	I am fully aware of all responsibilities	Same as colleague (it is a priority for some but not project itself)
P24	Additional benefits when implementing sustainability outweigh if you do not	Not of interest because it will cost more plus there is a lack of staff
P25	I know very well all the licenses in my projects, otherwise I could not do the work	Enforced top-down; Project managers have too little impact and responsibility
P26	As it totally depends on the project, who to address and who not	As we need to adapt our doing to the future and necessities, sustainability is actually the most important topic!
P27	Because open to new things, in firm lots of traditional project management: too "old school", P27 is willing to learn	Because there simply are not
P28	All the projects I have been managing have had a strong connection with sustainability, be it wider societal or environmental impact; To some degree (depending on the industry) sustainability becomes an essential part of a project and therefore is integrated into its objectives and goal in one way or another	The end user/buyer behaviour has started to change with more focus on sustainability when it comes to making a choice. Therefore, companies invest a lot in changing the product design, production etc. to be more sustainable; However, when it comes to the project management practices within companies, those are not the priority

Qualitative Findings based on the Participant Information Record

P#	Additional Insights
P1	/
P2	/
P3	/
P4	Disconnect what is possible versus own feelings; Company set up (institutional); Stakeholders & Owners have differing opinions; Simply not talked about in specific industry (IT); "Rechnerleistung" makes impact (not hipster drinks); Some things remain untouched; Some efforts (ie. public transportation)
P5	"Es fängt mit dem an, der etwas haben will"; #4 neither positive nor negative but always barriers due to several reasons; Struggled with disagree side: years of experience in PM and sustainability; #21 P5's firm has power but still business' priority is business itself > but with capable project managers everything is achieveable; New method interesting; Weight distribution > Strong indicators through emotion/wants versus possibility
P6	Very interesting research method
P7	In insurance, we did have some recycling but as for the projects overall (...) nothing; Even distribution on left and right side; A lot of them I would place on -4, -5 (...)
P8	Immediately filled -5 and +5 statements; Difficult to assign, you *have* to do despite not entirely agreeing; Statements complete (broad perspective); Perhaps likert-scale; Fresh topic > forced to consider everything (great!)
P9	/
P10	"How do you define sustainability?" > Problems for grooving into the sorting process; "Des los i ma einreden"; #30 Our users do not care, only focus on costs; On a political level as long as you mention "green" all is good, all is well; On individual goals > as long as there are incentives they will do anything (two-faced world: what they say/do in public is different than after two, three beers); Big companies too rigid > "Feel free to work agile *but* [with a] fixed price, traditional procedures etc."; Agree *but* #18 I can still enforce it on them (administrative, structural, operational) > project / team needs / guidelines
P11	#38 I am in the scientific/education sector, we have very clear guidelines and need to follow them; #28 some roll their eyes; #24 in our case usually EU is client; #22 it depends; #20 not explicitly anchored down but as project manager you might adopt from your own will; #18 human is a creature of habit; #16 I do not get extra bonus points ie. if I take the train as opposed to flying or order plant-based catering; Now I'm running out of negatively-valued boxes; #9 you don not necessarily change the methods but the operational procedures; Struggles with the last few notes because run out of boxes
P12	Depends on the level of sustainability (social & governmental [interal] and environmental [external]); Company is on innovation & entrepreneurship; Strong focus on digital solutions > hard to find proper solutions (more steps but worth it); #44 complexity of bank -> Every project has impact and require efforts; #18 on negative side because specific sectore require different methods > freedom is being given (perhaps also Italian mindset); #5 & #4 -> wanna assign them to disagree but no space > moves already assigned disagreeable statements to neutral colum; Really interesting experience, I became more conscious and invigorated by the topic and new ways to think about it
P13	#3 immediately to -5; #4 yes especially in my projects; #11 immediately to +5 certainly; #14 goes hand in hand; #33 yes the team needs more workshops/knowledge transfer; there are two to three sustainability goals which I simply have to fulfill; Very interesting connnection project management - sustainability

P14	#21 after hand-off keep it running as usual (result are not immediately visible); #11 lots of agility (IT); #16 big problem - additional effort not rewarded; #34 tools are missing (you bring in project management skills but not the industry skills); #6 keeps on changing all the time; Positive perception of sustainability in general; Some people drive sustainability to an extreme and fail to translate ideas into actions, Many disadvantages (talked about energy consumption, electrical vehicles, pharmaceuticals > Sustainability simply not feasible for everyone, always shortcomings); Sustainability has always been around
P15	Strong tendency for disagree side > Assigned all of them to the left at first till no more space; #38 on one hand regulations ought to be enforced *because of* the law but at the same time restraining; #32 not enough is made public > Knowledge transfer mainly through university - company workshops no sustainability at all; #17 because company places great importance; #7 difficult (...) because production lifecycle system > collect data about dangerous ingredients > imortant because legal issues & risk involved; #43 "notgedrungen" (initially on disagree but because sustainability intgrated in decision making anyways and long-term); Also super interesting for me, I was really forced to reconsider my own values through this
P16	#22 because client enforces it; #25 because new paradigm; #31 one of the main obstacles; #14 driving force; #44 because all of the projects are collaborative yet no scalability internationally; #43 trying to make business case that it *does* make sense; #8 new technologies inherently risky; #20 slowly easing into it; Sustainability is the first thing to be critisised and the first one to be dropped; #6 jurisdiction is heavily enforced > Down to 0% by 2050; Tends towards agree side (first one to do so)
P17	cost increase not unnecessary but still increase > cheap or sustainable? Short-term gains!; #41 especially in construction; Kept some for last > did not fill out -5 and 5 because cautious; #22 neither nor; #4 it is not a egative additional effort
P18	#18 typical Austrian understanding, Austrian structures; #4 not inconvenient but rather interesting & opens-up new perspectives > innovative; #22 because people in projects against sustainability > Difficult to integrate overall; Evenly distributes majority of cards
P19	Re-usage of buildlings; Eco-Plus environmental clusters; #33 no continuing education (in theory) but practice > One specialist passes on learning; #27 really depends on project - external companies (some firms wanna have sustainability enforced, majority says it is more of an additional objective "nice to have"; also rental vs. purchase > huge difference; #23 different policy *but* if not communicated internally less likelihood of implementation > needs to be integrated in company values; #22 only problem if unexpected side effects or enforced (finding of companies); #20 because closeness to politics -> we *could* do more (ie. digital signatures); Seasurement of impact questionable > needs more measurements also on individual basis; outside yes internal no; #15 we have sustainability expert but still if I can integrate it why not (either client itself already wants sutainability or we indirectly suggest it); # necessary > sustainability and higher cost goes hand in hand (thus subventions needed)!; Participant difficulties assigning cards on the agree section; #39 complex ones yes; #4 it is extra effort but still needs to be done; difficulty to find something for +5
P20	#4 willingness is there but no budget; #29 monetary background; Sustainable project management allows for more in-depth practices (more detailed)
P21	Quick to assign extreme values, difficulty with understanding of sustainable project management in general; ÖGNI-Zertifizierung: Since a few years orally discussed in construction, in practice nothing has happened since (because of the procurements department)
P22	#18 more of a geographical/age issue; #45 yes for sure; #25 initially not judged; most of them strongly disagree; #8 + #23 + #4 > strongly disagree but no space; I feel like as if I was playing chess;
P23	#7 strong no, awareness is there but difficult and costly; *generational change*; cost increase not Unnecessary; "not enough -5 boxes" > He is strongly opinionated; #42 in principal it is not difficult as such but difficult to get people on board
P24	Strongly opinionated; Nothing really changes in Austria because obedience to superiors, you got to keep silent if you want to keep your job; Most recent project not optimal in terms of sustainability; #43 every project is suitable; #42 no, it is a matter of personal motivation; #40 as sad as it is; #39 different but doable; #33 question of their willingness; #32 zero because methods are the same essentially; #30 market provides framework; #28 of course because sustainability threatens time/cost + increases administrative issues; #25 procedures are there to be changed; everything is possible but it takes the right people; #24 if you do not have to do it then do not; If sustainability is enforced > strong opposition (especially in capitalistic markets); #23 commitment stems from above - either in line with management or you will be replaced (could change in future - nowadays benefits capitalism only); #21 sadly only a dream; #18 culturally cause (ie. Scandinavians & Chinese think differently); #12 it always starts somewhere, increases the costs but also the benefits; #8 interpersonal risks (burnouts etc.); If you think sustainably the whole project management changes
P25	#43 because IT project in sports; SPM heavily depends on company; #23 also different views within departments (ie. law department on client's side, management on profit > many contrasting views and not sustainable at all); Difficulty in sorting because never been in touch with SPM; #13 because of regulations you are acting sustainbly > Thus you need to do it and hence deal with extra costs > somewhat enforced; sees the last five as neutral

P26 Types and options of sustainable project management which ones do you refer to?

P27 Systematically pre-selects all of them evenly, no clear left/right tendency; Very difficult for him/her to assign to actual values; #8 from -4 to 0 because at first he/she thought yes but for his/her projects in specific not really

P28 /

Qualitative Findings based on the Participant Information Record

P#	Any Statements missing in the Q-Set?
P1	I could not think of any
P2	/
P3	/
P4	I am aware that something needs to be changed, but I do not know how to get started; I Tried to change it but it has not worked
P5	Awareness in development: It is happening; Technology and sustainability *would* be possible but questions regarding integration/implementation; Mindset
P6	"Awareness of Sustainability"
P7	/
P8	More project-specific (R&D easier than IT/SAP for example)
P9	/
P10	More business case-related
P11	/
P12	
P13	/
P14	Define sustainability in general; Perhaps more industry-specific
P15	/
P16	Position in terms of leadership, operational context
P17	Whether people are aware or know enough regarding sustainability
P18	Participant and its private sustainability integration (private versus business)
P19	/
P20	/
P21	/
P22	/
P23	/
P24	/
P25	Perhaps more industry-specific
P26	/
P27	/
P28	/

12 Appendix D

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Correlation Matrix Between Sorts

SORTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1 P1	100	19	-17	25	-7	21	13	-25	4	-1	10	-2	-5	1	-1	17	8	-3	17	17	32	29	33	4	-9	16	26	11
2 P2	19	100	11	11	-29	9	34	26	13	7	9	-19	-37	-17	-2	-6	-19	-17	9	-3	-3	4	19	0	21	15	17	12
3 P3	-17	11	100	-3	-24	2	40	17	-24	28	-23	2	-11	-3	15	-39	0	13	-3	-6	-4	-9	2	20	1	-7	4	-24
4 P4	25	11	-3	100	27	49	21	-4	57	17	23	18	-7	33	33	9	12	42	31	4	-9	6	44	29	14	36	40	10
5 P5	-7	-29	-24	27	100	42	-34	-11	20	4	41	57	3	45	24	26	14	31	4	26	-24	39	30	17	-19	23	20	20
6 P6	21	9	2	49	42	100	11	16	34	33	30	37	-5	45	36	-1	41	46	36	21	0	42	51	27	-8	40	56	27
7 P7	13	34	40	21	-34	11	100	11	18	11	-24	-3	-26	10	7	-43	14	20	27	9	16	4	16	11	23	-6	13	-10
8 P8	-25	26	17	-4	-11	16	11	100	33	6	-27	-7	-23	2	0	-9	0	23	39	-15	4	9	-9	13	38	7	5	13
9 P9	4	13	-24	57	20	34	18	33	100	7	8	25	-7	40	6	10	-6	31	39	-6	8	15	11	-10	50	30	36	9
10 P10	-1	7	28	17	4	33	11	6	7	100	22	43	-31	24	33	14	-6	10	9	13	16	13	34	15	14	23	27	-4
11 P11	10	9	-23	23	41	30	-24	-27	8	22	100	34	25	32	17	50	23	-3	7	35	-13	25	36	3	-18	49	17	21
12 P12	-2	-19	2	18	57	37	-3	-7	25	43	34	100	7	55	38	21	10	12	6	41	1	44	28	16	11	38	18	11
13 P13	-5	-37	-11	-7	3	-5	-26	-23	-7	-31	25	7	100	16	8	22	40	-9	9	15	-1	-3	-21	-28	4	31	1	10
14 P14	1	-17	-3	33	45	45	10	2	40	24	32	55	16	100	39	12	30	40	26	26	-3	31	32	6	7	35	45	4
15 P15	-1	-2	15	33	24	36	7	0	6	33	17	38	8	39	100	9	4	24	17	37	-15	-1	15	24	20	20	29	18
16 P16	17	-6	-39	9	26	-1	-43	-9	10	14	50	21	22	12	9	100	-5	-23	13	28	0	6	3	10	5	30	10	22
17 P17	8	-19	0	12	14	41	14	0	-6	-6	23	10	40	30	4	-5	100	37	35	19	4	22	19	1	-21	34	28	27
18 P18	-3	-17	13	42	31	46	20	23	31	10	-3	12	-9	40	24	-23	37	100	34	-2	4	27	21	31	4	12	33	-2
19 P19	17	9	-3	31	4	36	27	39	39	9	7	6	9	26	17	13	35	34	100	24	12	3	6	16	43	30	38	23
20 P20	17	-3	-6	4	26	21	9	-15	-6	13	35	41	15	26	37	28	19	-2	24	100	-21	28	30	4	3	7	18	9
21 P21	32	-3	-4	-9	-24	0	16	4	8	16	-13	1	-1	-3	-15	0	4	4	12	-21	100	11	-19	0	14	2	17	-6
22 P22	29	4	-9	6	39	42	4	9	15	13	25	44	-3	31	-1	6	22	27	3	28	11	100	57	16	2	31	17	9
23 P23	33	19	2	44	30	51	16	-9	11	34	36	28	-21	32	15	3	19	21	6	30	-19	57	100	28	-21	21	23	7
24 P24	4	0	20	29	17	27	11	13	-10	15	3	16	-28	6	24	10	1	31	16	4	0	16	28	100	1	4	1	14
25 P25	-9	21	1	14	-19	-8	23	38	50	14	-18	11	4	7	20	5	-21	4	43	3	14	2	-21	1	100	24	16	27
26 P26	16	15	-7	36	23	40	-6	7	30	23	49	38	31	35	20	30	34	12	30	7	2	31	21	4	24	100	33	44
27 P27	26	17	4	40	20	56	13	5	36	27	17	18	1	45	29	10	28	33	38	18	17	17	23	1	16	33	100	16
28 P28	11	12	-24	10	20	27	-10	13	9	-4	21	11	10	4	18	22	27	-2	23	9	-6	9	7	14	27	44	16	100

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Unrotated Factor Matrix

	Factors		
SORTS	1	2	3
1 P1	0.2772	0.0176	0.1077
2 P2	0.1315	-0.2979	0.2040
3 P3	-0.0204	-0.3514	-0.4329
4 P4	0.6046	-0.1331	-0.0209
5 P5	0.4090	0.4965	-0.2307
6 P6	0.7771	0.0110	-0.2018
7 P7	0.1485	-0.5196	-0.2311
8 P8	0.1400	-0.4924	0.0694
9 P9	0.5191	-0.3025	0.2369

10 P10	0.3873	-0.0768	-0.1749
11 P11	0.4102	0.5780	0.0994
12 P12	0.5334	0.3065	-0.2509
13 P13	-0.0029	0.4676	0.2459
14 P14	0.6037	0.1373	-0.1780
15 P15	0.4110	0.0009	-0.2226
16 P16	0.2231	0.3616	0.4264
17 P17	0.2844	0.2253	-0.0036
18 P18	0.4300	-0.1891	-0.3752
19 P19	0.5458	-0.2755	0.2416
20 P20	0.3411	0.3765	-0.0915
21 P21	0.0319	-0.1925	0.1761
22 P22	0.5080	0.2273	-0.1007
23 P23	0.5438	0.1428	-0.3845
24 P24	0.2867	-0.0761	-0.2913
25 P25	0.2358	-0.4340	0.3838
26 P26	0.5876	0.1704	0.3186
27 P27	0.6082	-0.0880	0.0380
28 P28	0.3492	0.1385	0.3268
Eigenvalues	4.9380	2.5463	1.7148
% expl.Var.	18	9	6

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Cumulative Communalities Matrix

Factors 1 Thru	1	2	3
SORTS			
1 P1	0.0768	0.0771	0.0888
2 P2	0.0173	0.1061	0.1477
3 P3	0.0004	0.1239	0.3113
4 P4	0.3655	0.3832	0.3836
5 P5	0.1673	0.4138	0.4670
6 P6	0.6039	0.6041	0.6448
7 P7	0.0220	0.2920	0.3455
8 P8	0.0196	0.2620	0.2668
9 P9	0.2694	0.3609	0.4171
10 P10	0.1500	0.1559	0.1865
11 P11	0.1683	0.5024	0.5122
12 P12	0.2845	0.3784	0.4414
13 P13	0.0000	0.2187	0.2791
14 P14	0.3645	0.3834	0.4150
15 P15	0.1689	0.1689	0.2185
16 P16	0.0498	0.1805	0.3623
17 P17	0.0809	0.1316	0.1317
18 P18	0.1849	0.2207	0.3615
19 P19	0.2979	0.3738	0.4322
20 P20	0.1164	0.2581	0.2665
21 P21	0.0010	0.0381	0.0691
22 P22	0.2580	0.3097	0.3198
23 P23	0.2957	0.3161	0.4640

24	P24	0.0822	0.0880	0.1728
25	P25	0.0556	0.2439	0.3912
26	P26	0.3453	0.3743	0.4758
27	P27	0.3699	0.3777	0.3791
28	P28	0.1219	0.1411	0.2479
cum% expl.Var.		18	27	33

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Factor Matrix with an X Indicating a Defining Sort

		Loadings		
QSORT		1	2	3
1	P1	0.2502	0.1270	0.1002
2	P2	0.0346	0.0516	0.3793X
3	P3	-0.0004	-0.5469X	0.1104
4	P4	0.5636X	-0.0283	0.2554
5	P5	0.5278X	0.0646	-0.4292
6	P6	0.7905X	-0.1052	0.0945
7	P7	0.0940	-0.4335X	0.3857
8	P8	0.0335	-0.1571	0.4910X
9	P9	0.4016	0.1119	0.4933X
10	P10	0.3933	-0.1562	0.0859
11	P11	0.4808	0.3932	-0.3557
12	P12	0.6176X	-0.0312	-0.2428
13	P13	0.0344	0.4347X	-0.2982
14	P14	0.6413X	-0.0401	-0.0473
15	P15	0.4392X	-0.1599	0.0037
16	P16	0.1990	0.5634X	-0.0720
17	P17	0.3156	0.1268	-0.1263
18	P18	0.4525X	-0.3813	0.1064
19	P19	0.4313	0.1309	0.4785X
20	P20	0.4143X	0.1251	-0.2815
21	P21	-0.0373	0.0676	0.2512
22	P22	0.5502X	0.0617	-0.1152
23	P23	0.6237X	-0.2244	-0.1569
24	P24	0.3185	-0.2671	0.0097
25	P25	0.0766	0.1551	0.6011X
26	P26	0.5370X	0.4108	0.1365
27	P27	0.5640X	0.0449	0.2429
28	P28	0.2997	0.3825	0.1088
% expl.Var.		18	7	8

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Free Distribution Data Results

QSORT	MEAN	ST.DEV.
1 P1	0.000	2.477
2 P2	0.000	2.477
3 P3	0.000	2.477
4 P4	0.000	2.477
5 P5	0.000	2.477
6 P6	0.000	2.477
7 P7	0.000	2.477
8 P8	0.000	2.477
9 P9	0.000	2.477
10 P10	0.000	2.477
11 P11	0.000	2.477
12 P12	0.000	2.477
13 P13	0.000	2.477
14 P14	0.000	2.477
15 P15	0.000	2.477
16 P16	0.000	2.477
17 P17	0.000	2.477
18 P18	0.000	2.477
19 P19	0.000	2.477
20 P20	0.000	2.477
21 P21	0.000	2.477
22 P22	0.000	2.477
23 P23	0.000	2.477
24 P24	0.000	2.477
25 P25	0.000	2.477
26 P26	0.000	2.477
27 P27	0.000	2.477
28 P28	0.000	2.477

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Factor Scores with Corresponding Ranks

No.	Statement	No.	Factors 1		2		3	
1	Sustainability does not stimulate me	1	−2.02	45	0.18	22	−1.06	41
2	I do not feel motivated to address the topic of sustai	2	−1.63	43	−1.45	42	−0.07	23
3	I do not experience a moral or ethical obligation to d	3	−1.77	44	−1.43	41	−0.47	27
4	I perceive implementing sustainability as inconvenient	4	−1.05	40	1.51	4	0.03	20
5	I feel overwhelmed by the complexity of SPM practices	5	−0.43	27	0.68	8	−0.05	21
6	I am unaware of sustainability related legis for my pr	6	0.77	13	−1.04	38	−0.74	35
7	I am not aware of any environmental risks/impact of my	7	−0.66	37	−1.27	40	0.34	14
8	I think that sustainability increases risk & uncertain	8	−0.55	29	0.36	18	−0.95	38
9	I favour traditional PM over new, sustainable practice	9	−1.27	41	0.13	24	−0.62	33
10	I regard sustainable PM practices as low priority	10	−0.01	20	−0.17	28	−0.57	31
11	I am satisfied with the current PM practices in my pro	11	1.34	6	−0.44	32	0.10	19
12	I believe that SPM is aimed at large(r), impactful pro	12	−0.57	32	1.56	3	−0.09	24
13	I believe that considering S unnecessarily increases t	13	−0.18	23	0.47	14	−0.50	28

14	I do not see a connection between project¥s objectives	14	−0.55	28	−1.80	43	−0.63	34
15	I do not feel responsible for sustainability of my pro	15	−0.20	24	−0.41	30	−0.06	22
16	My PO/C is not giving me additional incentives\compens	16	1.74	3	−0.01	27	1.63	3
17	Addressing S will not give me a better status as a PM	17	−0.56	31	−0.47	33	−0.60	32
18	Project team prefers sticking to established PM routin	18	1.34	5	0.58	10	1.29	8
19	I believe it is the POs/Cs responsibility to drive S	19	2.08	1	1.11	6	0.72	11
20	My company does not adopt environmentally-friendly PMP	20	0.03	19	−0.43	31	−0.50	29
21	Sustainability is not the project¥s performance priori	21	1.95	2	−0.90	37	1.61	4
22	Implementing SP may hurt relationship with the PO\clie	22	−0.56	30	0.34	19	−0.19	25
23	When integrating SPMP, reputation as a PM could be at	23	−1.39	42	0.62	9	−1.38	43
24	According to the PO\client, S is not relevant for the	24	−0.02	21	−2.29	45	0.74	10
25	Company procedures limit consideration of S in the pro	25	1.39	4	0.43	15	0.29	17
26	Endusers are not interested in sustainability	26	−0.63	34	0.07	25	−1.05	40
27	Stakeholders are not interested in sustainability	27	0.19	18	−1.21	39	−0.34	26
28	I expect to be confronted with negative reactions or f	28	−0.64	36	0.57	12	−1.22	42
29	I feel there is a lack of interest amongst PT members	29	0.88	11	−0.48	34	−1.00	39
30	The market does not value SPM practices	30	0.87	12	1.26	5	−1.94	45
31	S is too complex & not practical enough to apply in pr	31	−0.39	26	0.58	11	0.42	13
32	Methods for SPM practices are missing	32	0.68	14	0.29	20	0.24	18
33	The PT lacks knowledge to understand how S can be impl	33	1.21	7	0.19	21	−0.95	37
34	The team does not have competences to integrate S in p	34	1.04	8	0.17	23	−1.56	44
35	I do not experience with SPM practices	35	−0.93	39	−0.52	35	1.82	2
36	For my projects no clear env. issues/impacts have been	36	0.94	10	−1.91	44	2.56	1
37	I do not have the methods or practices of SPM	37	0.30	16	−0.01	26	0.32	16
38	Regulations hinder the adoption of SPM practices in my	38	0.98	9	0.85	7	−0.94	36
39	I believe that S is difficult to integrate in the proj	39	−0.70	38	0.40	16	1.34	6
40	Considering S does not make my projects more successfu	40	−0.59	33	0.37	17	0.84	9
41	I do not believe that S can be addressed by all PM in	41	0.26	17	2.14	1	1.32	7
42	It is too difficult to align project with S goals/obje	42	−0.38	25	−0.89	36	−0.55	30
43	My project is not suitable for green PM practices	43	−0.12	22	−0.32	29	1.44	5

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Factor Scores with Corresponding Ranks

			Factors					
No.	Statement	No.	1		2		3	
44	I believe project too small to reap benefits of implem	44	−0.63	35	2.13	2	0.65	12
45	Proactive involv&enga of stakeholders requires too muc	45	0.42	15	0.50	13	0.32	15

Correlations Between Factor Scores

	1	2	3
1	1.0000	0.0512	0.2441
2	0.0512	1.0000	−0.0996
3	0.2441	−0.0996	1.0000

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Factor Scores -- For Factor 1

No.	Statement	No.	Z-SCORES
19	I believe it is the POs/Cs responsibility to drive S	19	2.081
21	Sustainability is not the project¥s performance priority	21	1.949
16	My PO/C is not giving me additional incentives\compensation	16	1.738
25	Company procedures limit consideration of S in the project	25	1.393
18	Project team prefers sticking to established PM routines	18	1.342
11	I am satisfied with the current PM practices in my project	11	1.339
33	The PT lacks knowledge to understand how S can be implemente	33	1.213
34	The team does not have competences to integrate S in project	34	1.045
38	Regulations hinder the adoption of SPM practices in my proje	38	0.984
36	For my projects no clear env. issues/impacts have been ident	36	0.936
29	I feel there is a lack of interest amongst PT members	29	0.880
30	The market does not value SPM practices	30	0.872
6	I am unaware of sustainability related legis for my project	6	0.768
32	Methods for SPM practices are missing	32	0.678
45	Proactive involv&enga of stakeholders requires too much effo	45	0.425
37	I do not have the methods or practices of SPM	37	0.298
41	I do not believe that S can be addressed by all PM in every	41	0.264
27	Stakeholders are not interested in sustainability	27	0.187
20	My company does not adopt environmentally-friendly PMP	20	0.027
10	I regard sustainable PM practices as low priority	10	-0.012
24	According to the PO\client, S is not relevant for the projec	24	-0.023
43	My project is not suitable for green PM practices	43	-0.121
13	I believe that considering S unnecessarily increases the cos	13	-0.182
15	I do not feel responsible for sustainability of my projects	15	-0.198
42	It is too difficult to align project with S goals/objectives	42	-0.375
31	S is too complex & not practical enough to apply in project	31	-0.389
5	I feel overwhelmed by the complexity of SPM practices	5	-0.429
14	I do not see a connection between project¥s objectives & S	14	-0.546
8	I think that sustainability increases risk & uncertainy	8	-0.549
22	Implementing SP may hurt relationship with the PO\client	22	-0.556
17	Addressing S will not give me a better status as a PM	17	-0.559
12	I believe that SPM is aimed at large(r), impactful projects	12	-0.569
40	Considering S does not make my projects more successful	40	-0.587
26	Endusers are not interested in sustainability	26	-0.634
44	I believe project too small to reap benefits of implementing	44	-0.634
28	I expect to be confronted with negative reactions or feedbac	28	-0.641
7	I am not aware of any environmental risks/impact of my proje	7	-0.660
39	I believe that S is difficult to integrate in the project	39	-0.702
35	I do not experience with SPM practices	35	-0.931
4	I perceive implementing sustainability as inconvenient	4	-1.052
9	I favour traditional PM over new, sustainable practices	9	-1.272
23	When integrating SPMP, reputation as a PM could be at risk	23	-1.385
2	I do not feel motivated to address the topic of sustainabili	2	-1.625

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Factor Scores -- For Factor   1

 No.  Statement                                        No.   Z-SCORES

   3  I do not experience a moral or ethical obligation to do so     3    -1.773
   1  Sustainability does not stimulate me                           1    -2.016


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Factor Scores -- For Factor   2

 No.  Statement                                        No.   Z-SCORES

  41  I do not believe that S can be addressed by all PM in every    41     2.137
  44  I believe project too small to reap benefits of implementing   44     2.127
  12  I believe that SPM is aimed at large(r), impactful projects    12     1.560
   4  I perceive implementing sustainability as inconvenient          4     1.508
  30  The market does not value SPM practices                        30     1.257
  19  I believe it is the POs/Cs responsibility to drive S            19     1.109
  38  Regulations hinder the adoption of SPM practices in my proje    38     0.849
   5  I feel overwhelmed by the complexity of SPM practices           5     0.682
  23  When integrating SPMP, reputation as a PM could be at risk      23     0.620
  18  Project team prefers sticking to established PM routines        18     0.577
  31  S is too complex & not practical enough to apply in project     31     0.576
  28  I expect to be confronted with negative reactions or feedbac    28     0.566
  45  Proactive involv&enga of stakeholders requires too much effo    45     0.504
  13  I believe that considering S unnecessarily increases the cos    13     0.471
  25  Company procedures limit consideration of S in the project      25     0.429
  39  I believe that S is difficult to integrate in the project       39     0.399
  40  Considering S does not make my projects more successful         40     0.366
   8  I think that sustainability increases risk & uncertainy          8     0.356
  22  Implementing SP may hurt relationship with the PO\client        22     0.335
  32  Methods for SPM practices are missing                           32     0.294
  33  The PT lacks knowledge to understand how S can be implemente    33     0.188
   1  Sustainability does not stimulate me                             1     0.177
  34  The team does not have competences to integrate S in project     34     0.168
   9  I favour traditional PM over new, sustainable practices          9     0.126
  26  Endusers are not interested in sustainability                   26     0.073
  37  I do not have the methods or practices of SPM                   37    -0.010
  16  My PO/C is not giving me additional incentives\compensation      16    -0.010
  10  I regard sustainable PM practices as low priority               10    -0.169
  43  My project is not suitable for green PM practices               43    -0.321
  15  I do not feel responsible for sustainability of my projects     15    -0.407
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 20  My company does not adopt environmentally-friendly PMP      20    -0.433
 11  I am satisfied with the current PM practices in my project  11    -0.440
 17  Addressing S will not give me a better status as a PM       17    -0.471
 29  I feel there is a lack of interest amongst PT members       29    -0.480
 35  I do not experience with SPM practices                      35    -0.524
 42  It is too difficult to align project with S goals/objectives 42   -0.888
 21  Sustainability is not the project¥s performance priority    21    -0.903
  6  I am unaware of sustainability related legis for my project  6    -1.039
 27  Stakeholders are not interested in sustainability           27    -1.215
  7  I am not aware of any environmental risks/impact of my proje  7   -1.268
  3  I do not experience a moral or ethical obligation to do so  3    -1.427
  2  I do not feel motivated to address the topic of sustainabili  2   -1.447
 14  I do not see a connection between project¥s objectives & S  14    -1.801


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Factor Scores -- For Factor    2

No.  Statement                                              No.    Z-SCORES

 36  For my projects no clear env. issues/impacts have been ident  36   -1.906
 24  According to the PO\client, S is not relevant for the projec  24   -2.295


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Factor Scores -- For Factor    3

No.  Statement                                              No.    Z-SCORES

 36  For my projects no clear env. issues/impacts have been ident  36    2.559
 35  I do not experience with SPM practices                      35    1.825
 16  My PO/C is not giving me additional incentives\compensation 16    1.628
 21  Sustainability is not the project¥s performance priority    21    1.612
 43  My project is not suitable for green PM practices           43    1.436
 39  I believe that S is difficult to integrate in the project   39    1.342
 41  I do not believe that S can be addressed by all PM in every 41    1.321
 18  Project team prefers sticking to established PM routines    18    1.294
 40  Considering S does not make my projects more successful     40    0.843
 24  According to the PO\client, S is not relevant for the projec 24   0.743
 19  I believe it is the POs/Cs responsibility to drive S        19    0.718
 44  I believe project too small to reap benefits of implementing 44   0.652
 31  S is too complex & not practical enough to apply in project 31    0.420
  7  I am not aware of any environmental risks/impact of my proje  7   0.335
 45  Proactive involv&enga of stakeholders requires too much effo 45   0.323
 37  I do not have the methods or practices of SPM               37    0.323
 25  Company procedures limit consideration of S in the project  25    0.293
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 32  Methods for SPM practices are missing                        32       0.242
 11  I am satisfied with the current PM practices in my project    11       0.104
  4  I perceive implementing sustainability as inconvenient         4       0.026
  5  I feel overwhelmed by the complexity of SPM practices          5      -0.047
 15  I do not feel responsible for sustainability of my projects   15      -0.063
  2  I do not feel motivated to address the topic of sustainabili   2      -0.071
 12  I believe that SPM is aimed at large(r), impactful projects   12      -0.089
 22  Implementing SP may hurt relationship with the PO\client      22      -0.188
 27  Stakeholders are not interested in sustainability             27      -0.344
  3  I do not experience a moral or ethical obligation to do so     3      -0.470
 13  I believe that considering S unnecessarily increases the cos  13      -0.496
 20  My company does not adopt environmentally-friendly PMP        20      -0.502
 42  It is too difficult to align project with S goals/objectives  42      -0.550
 10  I regard sustainable PM practices as low priority             10      -0.567
 17  Addressing S will not give me a better status as a PM         17      -0.604
  9  I favour traditional PM over new, sustainable practices        9      -0.616
 14  I do not see a connection between project¥s objectives & S    14      -0.633
  6  I am unaware of sustainability related legis for my project    6      -0.742
 38  Regulations hinder the adoption of SPM practices in my proje  38      -0.942
 33  The PT lacks knowledge to understand how S can be implemente  33      -0.950
  8  I think that sustainability increases risk & uncertainy        8      -0.953
 29  I feel there is a lack of interest amongst PT members         29      -1.002
 26  Endusers are not interested in sustainability                 26      -1.047
  1  Sustainability does not stimulate me                          1      -1.064
 28  I expect to be confronted with negative reactions or feedbac  28      -1.216
 23  When integrating SPMP, reputation as a PM could be at risk    23      -1.382


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Factor Scores -- For Factor    3

 No.  Statement                                                    No.     Z-SCORES

 34  The team does not have competences to integrate S in project  34      -1.563
 30  The market does not value SPM practices                       30      -1.939


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Descending Array of Differences Between Factors   1 and   2

 No.  Statement                                                    No.     Type   1  Type   2  Difference

 21  Sustainability is not the project¥s performance priority      21       1.949    -0.903       2.851
 36  For my projects no clear env. issues/impacts have been ident  36       0.936    -1.906       2.842
 24  According to the PO\client, S is not relevant for the projec  24      -0.023    -2.295       2.272
  6  I am unaware of sustainability related legis for my project    6       0.768    -1.039       1.806
 11  I am satisfied with the current PM practices in my project    11       1.339    -0.440       1.779
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16	My PO/C is not giving me additional incentives\compensation	1.738	-0.010	1.748
27	Stakeholders are not interested in sustainability	0.187	-1.215	1.402
29	I feel there is a lack of interest amongst PT members	0.880	-0.480	1.360
14	I do not see a connection between project¥s objectives & S	-0.546	-1.801	1.255
33	The PT lacks knowledge to understand how S can be implemente	1.213	0.188	1.025
19	I believe it is the POs/Cs responsibility to drive S	2.081	1.109	0.972
25	Company procedures limit consideration of S in the project	1.393	0.429	0.964
34	The team does not have competences to integrate S in project	1.045	0.168	0.877
18	Project team prefers sticking to established PM routines	1.342	0.577	0.766
7	I am not aware of any environmental risks/impact of my proje	-0.660	-1.268	0.608
42	It is too difficult to align project with S goals/objectives	-0.375	-0.888	0.513
20	My company does not adopt environmentally-friendly PMP	0.027	-0.433	0.460
32	Methods for SPM practices are missing	0.678	0.294	0.384
37	I do not have the methods or practices of SPM	0.298	-0.010	0.308
15	I do not feel responsible for sustainability of my projects	-0.198	-0.407	0.209
43	My project is not suitable for green PM practices	-0.121	-0.321	0.200
10	I regard sustainable PM practices as low priority	-0.012	-0.169	0.157
38	Regulations hinder the adoption of SPM practices in my proje	0.984	0.849	0.135
45	Proactive involv&enga of stakeholders requires too much effo	0.425	0.504	-0.079
17	Addressing S will not give me a better status as a PM	-0.559	-0.471	-0.088
2	I do not feel motivated to address the topic of sustainabili	-1.625	-1.447	-0.178
3	I do not experience a moral or ethical obligation to do so	-1.773	-1.427	-0.346
30	The market does not value SPM practices	0.872	1.257	-0.386
35	I do not experience with SPM practices	-0.931	-0.524	-0.407
13	I believe that considering S unnecessarily increases the cos	-0.182	0.471	-0.653
26	Endusers are not interested in sustainability	-0.634	0.073	-0.707
22	Implementing SP may hurt relationship with the PO\client	-0.556	0.335	-0.892
8	I think that sustainability increases risk & uncertainy	-0.549	0.356	-0.904
40	Considering S does not make my projects more successful	-0.587	0.366	-0.953
31	S is too complex & not practical enough to apply in project	-0.389	0.576	-0.964
39	I believe that S is difficult to integrate in the project	-0.702	0.399	-1.101
5	I feel overwhelmed by the complexity of SPM practices	-0.429	0.682	-1.111
28	I expect to be confronted with negative reactions or feedbac	-0.641	0.566	-1.207
9	I favour traditional PM over new, sustainable practices	-1.272	0.126	-1.397
41	I do not believe that S can be addressed by all PM in every	0.264	2.137	-1.873
23	When integrating SPMP, reputation as a PM could be at risk	-1.385	0.620	-2.005
12	I believe that SPM is aimed at large(r), impactful projects	-0.569	1.560	-2.129
1	Sustainability does not stimulate me	-2.016	0.177	-2.192

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Descending Array of Differences Between Factors 1 and 2

No.	Statement	Type 1	Type 2	Difference
4	I perceive implementing sustainability as inconvenient	-1.052	1.508	-2.560
44	I believe project too small to reap benefits of implementing	-0.634	2.127	-2.761

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Descending Array of Differences Between Factors 1 and 3

No.	Statement	No.	Type 1	Type 3	Difference
30	The market does not value SPM practices	30	0.872	-1.939	2.811
34	The team does not have competences to integrate S in project	34	1.045	-1.563	2.607
33	The PT lacks knowledge to understand how S can be implemente	33	1.213	-0.950	2.164
38	Regulations hinder the adoption of SPM practices in my proje	38	0.984	-0.942	1.927
29	I feel there is a lack of interest amongst PT members	29	0.880	-1.002	1.882
6	I am unaware of sustainability related legis for my project	6	0.768	-0.742	1.510
19	I believe it is the POs/Cs responsibility to drive S	19	2.081	0.718	1.363
11	I am satisfied with the current PM practices in my project	11	1.339	0.104	1.236
25	Company procedures limit consideration of S in the project	25	1.393	0.293	1.100
28	I expect to be confronted with negative reactions or feedbac	28	-0.641	-1.216	0.575
10	I regard sustainable PM practices as low priority	10	-0.012	-0.567	0.555
27	Stakeholders are not interested in sustainability	27	0.187	-0.344	0.531
20	My company does not adopt environmentally-friendly PMP	20	0.027	-0.502	0.529
32	Methods for SPM practices are missing	32	0.678	0.242	0.436
26	Endusers are not interested in sustainability	26	-0.634	-1.047	0.413
8	I think that sustainability increases risk & uncertainy	8	-0.549	-0.953	0.404
21	Sustainability is not the project¥s performance priority	21	1.949	1.612	0.336
13	I believe that considering S unnecessarily increases the cos	13	-0.182	-0.496	0.314
42	It is too difficult to align project with S goals/objectives	42	-0.375	-0.550	0.174
16	My PO/C is not giving me additional incentives\compensation	16	1.738	1.628	0.110
45	Proactive involv&enga of stakeholders requires too much effo	45	0.425	0.323	0.101
14	I do not see a connection between project¥s objectives & S	14	-0.546	-0.633	0.087
18	Project team prefers sticking to established PM routines	18	1.342	1.294	0.048
17	Addressing S will not give me a better status as a PM	17	-0.559	-0.604	0.044
23	When integrating SPMP, reputation as a PM could be at risk	23	-1.385	-1.382	-0.004
37	I do not have the methods or practices of SPM	37	0.298	0.323	-0.025
15	I do not feel responsible for sustainability of my projects	15	-0.198	-0.063	-0.136
22	Implementing SP may hurt relationship with the PO\client	22	-0.556	-0.188	-0.368
5	I feel overwhelmed by the complexity of SPM practices	5	-0.429	-0.047	-0.382
12	I believe that SPM is aimed at large(r), impactful projects	12	-0.569	-0.089	-0.480
9	I favour traditional PM over new, sustainable practices	9	-1.272	-0.616	-0.656
24	According to the PO\client, S is not relevant for the projec	24	-0.023	0.743	-0.766
31	S is too complex & not practical enough to apply in project	31	-0.389	0.420	-0.809
1	Sustainability does not stimulate me	1	-2.016	-1.064	-0.951
7	I am not aware of any environmental risks/impact of my proje	7	-0.660	0.335	-0.995
41	I do not believe that S can be addressed by all PM in every	41	0.264	1.321	-1.056
4	I perceive implementing sustainability as inconvenient	4	-1.052	0.026	-1.078
44	I believe project too small to reap benefits of implementing	44	-0.634	0.652	-1.286
3	I do not experience a moral or ethical obligation to do so	3	-1.773	-0.470	-1.302
40	Considering S does not make my projects more successful	40	-0.587	0.843	-1.430
2	I do not feel motivated to address the topic of sustainabili	2	-1.625	-0.071	-1.554
43	My project is not suitable for green PM practices	43	-0.121	1.436	-1.557
36	For my projects no clear env. issues/impacts have been ident	36	0.936	2.559	-1.623

Descending Array of Differences Between Factors 1 and 3

No.	Statement	No.	Type 1	Type 3	Difference
39	I believe that S is difficult to integrate in the project	39	-0.702	1.342	-2.043
35	I do not experience with SPM practices	35	-0.931	1.825	-2.755

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Descending Array of Differences Between Factors 2 and 3

No.	Statement	No.	Type 2	Type 3	Difference
30	The market does not value SPM practices	30	1.257	-1.939	3.197
23	When integrating SPMP, reputation as a PM could be at risk	23	0.620	-1.382	2.001
38	Regulations hinder the adoption of SPM practices in my proje	38	0.849	-0.942	1.791
28	I expect to be confronted with negative reactions or feedbac	28	0.566	-1.216	1.782
34	The team does not have competences to integrate S in project	34	0.168	-1.563	1.731
12	I believe that SPM is aimed at large(r), impactful projects	12	1.560	-0.089	1.649
4	I perceive implementing sustainability as inconvenient	4	1.508	0.026	1.482
44	I believe project too small to reap benefits of implementing	44	2.127	0.652	1.475
8	I think that sustainability increases risk & uncertainy	8	0.356	-0.953	1.308
1	Sustainability does not stimulate me	1	0.177	-1.064	1.241
33	The PT lacks knowledge to understand how S can be implemente	33	0.188	-0.950	1.138
26	Endusers are not interested in sustainability	26	0.073	-1.047	1.120
13	I believe that considering S unnecessarily increases the cos	13	0.471	-0.496	0.967
41	I do not believe that S can be addressed by all PM in every	41	2.137	1.321	0.816
9	I favour traditional PM over new, sustainable practices	9	0.126	-0.616	0.741
5	I feel overwhelmed by the complexity of SPM practices	5	0.682	-0.047	0.729
22	Implementing SP may hurt relationship with the PO\client	22	0.335	-0.188	0.523
29	I feel there is a lack of interest amongst PT members	29	-0.480	-1.002	0.521
10	I regard sustainable PM practices as low priority	10	-0.169	-0.567	0.398
19	I believe it is the POs/Cs responsibility to drive S	19	1.109	0.718	0.391
45	Proactive involv&enga of stakeholders requires too much effo	45	0.504	0.323	0.180
31	S is too complex & not practical enough to apply in project	31	0.576	0.420	0.156
25	Company procedures limit consideration of S in the project	25	0.429	0.293	0.136
17	Addressing S will not give me a better status as a PM	17	-0.471	-0.604	0.133
20	My company does not adopt environmentally-friendly PMP	20	-0.433	-0.502	0.069
32	Methods for SPM practices are missing	32	0.294	0.242	0.052
6	I am unaware of sustainability related legis for my project	6	-1.039	-0.742	-0.296
37	I do not have the methods or practices of SPM	37	-0.010	0.323	-0.332
42	It is too difficult to align project with S goals/objectives	42	-0.888	-0.550	-0.338
15	I do not feel responsible for sustainability of my projects	15	-0.407	-0.063	-0.344
40	Considering S does not make my projects more successful	40	0.366	0.843	-0.477
11	I am satisfied with the current PM practices in my project	11	-0.440	0.104	-0.544
18	Project team prefers sticking to established PM routines	18	0.577	1.294	-0.717
27	Stakeholders are not interested in sustainability	27	-1.215	-0.344	-0.871
39	I believe that S is difficult to integrate in the project	39	0.399	1.342	-0.942
3	I do not experience a moral or ethical obligation to do so	3	-1.427	-0.470	-0.956
14	I do not see a connection between project¥s objectives & S	14	-1.801	-0.633	-1.168

2	I do not feel motivated to address the topic of sustainabili	2	-1.447	-0.071	-1.376
7	I am not aware of any environmental risks/impact of my proje	7	-1.268	0.335	-1.603
16	My PO/C is not giving me additional incentives\compensation	16	-0.010	1.628	-1.638
43	My project is not suitable for green PM practices	43	-0.321	1.436	-1.757
35	I do not experience with SPM practices	35	-0.524	1.825	-2.349
21	Sustainability is not the project¥s performance priority	21	-0.903	1.612	-2.515

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Descending Array of Differences Between Factors 2 and 3

No.	Statement	No.	Type 2	Type 3	Difference
24	According to the PO\client, S is not relevant for the projec	24	-2.295	0.743	-3.037
36	For my projects no clear env. issues/impacts have been ident	36	-1.906	2.559	-4.465

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Factor Q-Sort Values for Each Statement

No.	Statement	No.	Factor Arrays 1	2	3
1	Sustainability does not stimulate me	1	-5	0	-3
2	I do not feel motivated to address the topic of sustainabili	2	-4	-4	0
3	I do not experience a moral or ethical obligation to do so	3	-4	-3	-1
4	I perceive implementing sustainability as inconvenient	4	-3	4	0
5	I feel overwhelmed by the complexity of SPM practices	5	-1	3	0
6	I am unaware of sustainability related legis for my project	6	2	-3	-2
7	I am not aware of any environmental risks/impact of my proje	7	-2	-3	1
8	I think that sustainability increases risk & uncertainy	8	-1	1	-3
9	I favour traditional PM over new, sustainable practices	9	-3	0	-2
10	I regard sustainable PM practices as low priority	10	0	-1	-1
11	I am satisfied with the current PM practices in my project	11	3	-1	1
12	I believe that SPM is aimed at large(r), impactful projects	12	-1	4	0
13	I believe that considering S unnecessarily increases the cos	13	0	1	-1
14	I do not see a connection between project¥s objectives & S	14	-1	-4	-2
15	I do not feel responsible for sustainability of my projects	15	0	-1	0
16	My PO/C is not giving me additional incentives\compensation	16	4	-1	4
17	Addressing S will not give me a better status as a PM	17	-1	-2	-1
18	Project team prefers sticking to established PM routines	18	3	2	3
19	I believe it is the POs/Cs responsibility to drive S	19	5	3	2
20	My company does not adopt environmentally-friendly PMP	20	1	-1	-1
21	Sustainability is not the project¥s performance priority	21	4	-2	4
22	Implementing SP may hurt relationship with the PO\client	22	-1	1	0
23	When integrating SPMP, reputation as a PM could be at risk	23	-4	2	-4
24	According to the PO\client, S is not relevant for the projec	24	0	-5	2
25	Company procedures limit consideration of S in the project	25	4	1	1

26	Endusers are not interested in sustainability	26	-2	0	-3
27	Stakeholders are not interested in sustainability	27	1	-3	0
28	I expect to be confronted with negative reactions or feedbac	28	-2	2	-4
29	I feel there is a lack of interest amongst PT members	29	2	-2	-3
30	The market does not value SPM practices	30	2	3	-5
31	S is too complex & not practical enough to apply in project	31	0	2	2
32	Methods for SPM practices are missing	32	1	0	1
33	The PT lacks knowledge to understand how S can be implemente	33	3	0	-2
34	The team does not have competences to integrate S in project	34	3	0	-4
35	I do not experience with SPM practices	35	-3	-2	4
36	For my projects no clear env. issues/impacts have been ident	36	2	-4	5
37	I do not have the methods or practices of SPM	37	1	0	1
38	Regulations hinder the adoption of SPM practices in my proje	38	2	3	-2
39	I believe that S is difficult to integrate in the project	39	-3	1	3
40	Considering S does not make my projects more successful	40	-2	1	2
41	I do not believe that S can be addressed by all PM in every	41	1	5	3
42	It is too difficult to align project with S goals/objectives	42	0	-2	-1
43	My project is not suitable for green PM practices	43	0	-1	3
44	I believe project too small to reap benefits of implementing	44	-2	4	2

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			Factor Arrays		
No.	Statement	No.	1	2	3
45	Proactive involv&enga of stakeholders requires too much effo	45	1	2	1

Variance = 6.000 St. Dev. = 2.449

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Factor Q-Sort Values for Statements sorted by Consensus vs. Disagreement (Variance across Factor Z-Scores)

			Factor Arrays		
No.	Statement	No.	1	2	3
17	Addressing S will not give me a better status as a PM	17	-1	-2	-1
45	Proactive involv&enga of stakeholders requires too much effo	45	1	2	1
15	I do not feel responsible for sustainability of my projects	15	0	-1	0
37	I do not have the methods or practices of SPM	37	1	0	1
32	Methods for SPM practices are missing	32	1	0	1
42	It is too difficult to align project with S goals/objectives	42	0	-2	-1
10	I regard sustainable PM practices as low priority	10	0	-1	-1
20	My company does not adopt environmentally-friendly PMP	20	1	-1	-1
18	Project team prefers sticking to established PM routines	18	3	2	3
22	Implementing SP may hurt relationship with the PO\client	22	-1	1	0
13	I believe that considering S unnecessarily increases the cos	13	0	1	-1

31	S is too complex & not practical enough to apply in project	31	0	2	2
5	I feel overwhelmed by the complexity of SPM practices	5	-1	3	0
26	Endusers are not interested in sustainability	26	-2	0	-3
25	Company procedures limit consideration of S in the project	25	4	1	1
8	I think that sustainability increases risk & uncertainy	8	-1	1	-3
3	I do not experience a moral or ethical obligation to do so	3	-4	-3	-1
9	I favour traditional PM over new, sustainable practices	9	-3	0	-2
14	I do not see a connection between project¥s objectives & S	14	-1	-4	-2
19	I believe it is the POs/Cs responsibility to drive S	19	5	3	2
27	Stakeholders are not interested in sustainability	27	1	-3	0
40	Considering S does not make my projects more successful	40	-2	1	2
7	I am not aware of any environmental risks/impact of my proje	7	-2	-3	1
2	I do not feel motivated to address the topic of sustainabili	2	-4	-4	0
28	I expect to be confronted with negative reactions or feedbac	28	-2	2	-4
11	I am satisfied with the current PM practices in my project	11	3	-1	1
41	I do not believe that S can be addressed by all PM in every	41	1	5	3
43	My project is not suitable for green PM practices	43	0	-1	3
6	I am unaware of sustainability related legis for my project	6	2	-3	-2
29	I feel there is a lack of interest amongst PT members	29	2	-2	-3
16	My PO/C is not giving me additional incentives\compensation	16	4	-1	4
39	I believe that S is difficult to integrate in the project	39	-3	1	3
38	Regulations hinder the adoption of SPM practices in my proje	38	2	3	-2
33	The PT lacks knowledge to understand how S can be implemente	33	3	0	-2
1	Sustainability does not stimulate me	1	-5	0	-3
12	I believe that SPM is aimed at large(r), impactful projects	12	-1	4	0
23	When integrating SPMP, reputation as a PM could be at risk	23	-4	2	-4
4	I perceive implementing sustainability as inconvenient	4	-3	4	0
34	The team does not have competences to integrate S in project	34	3	0	-4
44	I believe project too small to reap benefits of implementing	44	-2	4	2
35	I do not experience with SPM practices	35	-3	-2	4
21	Sustainability is not the project¥s performance priority	21	4	-2	4
24	According to the PO\client, S is not relevant for the projec	24	0	-5	2
30	The market does not value SPM practices	30	2	3	-5

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Factor Arrays

No.	Statement	No.	1	2	3
36	For my projects no clear env. issues/impacts have been ident	36	2	-4	5

Factor Characteristics	Factors		
	1	2	3
No. of Defining Variables	12	4	5
Average Rel. Coef.	0.800	0.800	0.800

```
Composite Reliability              0.980    0.941    0.952

S.E. of Factor Z-Scores            0.143    0.243    0.218


Standard Errors for Differences in Factor Z-Scores

(Diagonal Entries Are S.E. Within Factors)

        Factors       1        2        3
              1   0.202    0.281    0.261
              2   0.281    0.343    0.326
              3   0.261    0.326    0.309
```



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Distinguishing Statements for Factor  1

 (P < .05 ;  Asterisk (*) Indicates Significance at P < .01)

Both the Factor Q-Sort Value (Q-SV) and the Z-Score (Z-SCR) are Shown.
```

		Factors					
		1		2		3	
No.	Statement	No.	Q-SV	Z-SCR	Q-SV	Z-SCR	Q-SV	Z-SCR
19	I believe it is the POs/Cs responsibility to drive S	19	5	2.08*	3	1.11	2	0.72
25	Company procedures limit consideration of S in the project	25	4	1.39*	1	0.43	1	0.29
11	I am satisfied with the current PM practices in my project	11	3	1.34*	-1	-0.44	1	0.10
33	The PT lacks knowledge to understand how S can be implemente	33	3	1.21*	0	0.19	-2	-0.95
34	The team does not have competences to integrate S in project	34	3	1.04*	0	0.17	-4	-1.56
36	For my projects no clear env. issues/impacts have been ident	36	2	0.94*	-4	-1.91	5	2.56
29	I feel there is a lack of interest amongst PT members	29	2	0.88*	-2	-0.48	-3	-1.00
6	I am unaware of sustainability related legis for my project	6	2	0.77*	-3	-1.04	-2	-0.74
41	I do not believe that S can be addressed by all PM in every	41	1	0.26*	5	2.14	3	1.32
27	Stakeholders are not interested in sustainability	27	1	0.19	-3	-1.21	0	-0.34
24	According to the PO\client, S is not relevant for the projec	24	0	-0.02*	-5	-2.29	2	0.74
31	S is too complex & not practical enough to apply in project	31	0	-0.39*	2	0.58	2	0.42
40	Considering S does not make my projects more successful	40	-2	-0.59*	1	0.37	2	0.84
44	I believe project too small to reap benefits of implementing	44	-2	-0.63*	4	2.13	2	0.65
28	I expect to be confronted with negative reactions or feedbac	28	-2	-0.64	2	0.57	-4	-1.22
7	I am not aware of any environmental risks/impact of my proje	7	-2	-0.66	-3	-1.27	1	0.34
39	I believe that S is difficult to integrate in the project	39	-3	-0.70*	1	0.40	3	1.34
4	I perceive implementing sustainability as inconvenient	4	-3	-1.05*	4	1.51	0	0.03
9	I favour traditional PM over new, sustainable practices	9	-3	-1.27	0	0.13	-2	-0.62
1	Sustainability does not stimulate me	1	-5	-2.02*	0	0.18	-3	-1.06

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Distinguishing Statements for Factor 2

(P < .05 ; Asterisk (*) Indicates Significance at P < .01)

Both the Factor Q-Sort Value (Q-SV) and the Z-Score (Z-SCR) are Shown.

			Factors					
			1		2		3	
No.	Statement	No.	Q-SV	Z-SCR	Q-SV	Z-SCR	Q-SV	Z-SCR
41	I do not believe that S can be addressed by all PM in every	41	1	0.26	5	2.14	3	1.32
44	I believe project too small to reap benefits of implementing	44	-2	-0.63	4	2.13*	2	0.65
12	I believe that SPM is aimed at large(r), impactful projects	12	-1	-0.57	4	1.56*	0	-0.09
4	I perceive implementing sustainability as inconvenient	4	-3	-1.05	4	1.51*	0	0.03
5	I feel overwhelmed by the complexity of SPM practices	5	-1	-0.43	3	0.68	0	-0.05
23	When integrating SPMP, reputation as a PM could be at risk	23	-4	-1.39	2	0.62*	-4	-1.38
18	Project team prefers sticking to established PM routines	18	3	1.34	2	0.58	3	1.29
28	I expect to be confronted with negative reactions or feedbac	28	-2	-0.64	2	0.57*	-4	-1.22
13	I believe that considering S unnecessarily increases the cos	13	0	-0.18	1	0.47	-1	-0.50
39	I believe that S is difficult to integrate in the project	39	-3	-0.70	1	0.40*	3	1.34
8	I think that sustainability increases risk & uncertainy	8	-1	-0.55	1	0.36*	-3	-0.95
33	The PT lacks knowledge to understand how S can be implemente	33	3	1.21	0	0.19*	-2	-0.95
1	Sustainability does not stimulate me	1	-5	-2.02	0	0.18*	-3	-1.06
34	The team does not have competences to integrate S in project	34	3	1.04	0	0.17*	-4	-1.56
9	I favour traditional PM over new, sustainable practices	9	-3	-1.27	0	0.13	-2	-0.62
26	Endusers are not interested in sustainability	26	-2	-0.63	0	0.07	-3	-1.05
16	My PO/C is not giving me additional incentives\compensation	16	4	1.74	-1	-0.01*	4	1.63
21	Sustainability is not the project¥s performance priority	21	4	1.95	-2	-0.90*	4	1.61
27	Stakeholders are not interested in sustainability	27	1	0.19	-3	-1.21*	0	-0.34
7	I am not aware of any environmental risks/impact of my proje	7	-2	-0.66	-3	-1.27	1	0.34
14	I do not see a connection between project¥s objectives & S	14	-1	-0.55	-4	-1.80*	-2	-0.63
36	For my projects no clear env. issues/impacts have been ident	36	2	0.94	-4	-1.91*	5	2.56
24	According to the PO\client, S is not relevant for the projec	24	0	-0.02	-5	-2.29*	2	0.74

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Distinguishing Statements for Factor 3

(P < .05 ; Asterisk (*) Indicates Significance at P < .01)

Both the Factor Q-Sort Value (Q-SV) and the Z-Score (Z-SCR) are Shown.

Factors

No.	Statement	No.	1 Q-SV	1 Z-SCR	2 Q-SV	2 Z-SCR	3 Q-SV	3 Z-SCR
36	For my projects no clear env. issues/impacts have been ident	36	2	0.94	-4	-1.91	5	2.56*
35	I do not experience with SPM practices	35	-3	-0.93	-2	-0.52	4	1.82*
43	My project is not suitable for green PM practices	43	0	-0.12	-1	-0.32	3	1.44*
39	I believe that S is difficult to integrate in the project	39	-3	-0.70	1	0.40	3	1.34*
41	I do not believe that S can be addressed by all PM in every	41	1	0.26	5	2.14	3	1.32
24	According to the PO\client, S is not relevant for the projec	24	0	-0.02	-5	-2.29	2	0.74*
44	I believe project too small to reap benefits of implementing	44	-2	-0.63	4	2.13	2	0.65*
7	I am not aware of any environmental risks/impact of my proje	7	-2	-0.66	-3	-1.27	1	0.34*
4	I perceive implementing sustainability as inconvenient	4	-3	-1.05	4	1.51	0	0.03*
2	I do not feel motivated to address the topic of sustainabili	2	-4	-1.63	-4	-1.45	0	-0.07*
27	Stakeholders are not interested in sustainability	27	1	0.19	-3	-1.21	0	-0.34
3	I do not experience a moral or ethical obligation to do so	3	-4	-1.77	-3	-1.43	-1	-0.47*
9	I favour traditional PM over new, sustainable practices	9	-3	-1.27	0	0.13	-2	-0.62
38	Regulations hinder the adoption of SPM practices in my proje	38	2	0.98	3	0.85	-2	-0.94*
33	The PT lacks knowledge to understand how S can be implemente	33	3	1.21	0	0.19	-2	-0.95*
1	Sustainability does not stimulate me	1	-5	-2.02	0	0.18	-3	-1.06*
28	I expect to be confronted with negative reactions or feedbac	28	-2	-0.64	2	0.57	-4	-1.22
34	The team does not have competences to integrate S in project	34	3	1.04	0	0.17	-4	-1.56*
30	The market does not value SPM practices	30	2	0.87	3	1.26	-5	-1.94*

Consensus Statements -- Those That Do Not Distinguish Between ANY Pair of Factors.

All Listed Statements are Non-Significant at P>.01, and Those Flagged With an * are also Non-Significant at P>.05.

			Factors					
No.	Statement	No.	1 Q-SV	1 Z-SCR	2 Q-SV	2 Z-SCR	3 Q-SV	3 Z-SCR
10	I regard sustainable PM practices as low priority	10	0	-0.01	-1	-0.17	-1	-0.57
15*	I do not feel responsible for sustainability of my projects	15	0	-0.20	-1	-0.41	0	-0.06
17*	Addressing S will not give me a better status as a PM	17	-1	-0.56	-2	-0.47	-1	-0.60
20	My company does not adopt environmentally-friendly PMP	20	1	0.03	-1	-0.43	-1	-0.50
32*	Methods for SPM practices are missing	32	1	0.68	0	0.29	1	0.24
37*	I do not have the methods or practices of SPM	37	1	0.30	0	-0.01	1	0.32
42*	It is too difficult to align project with S goals/objectives	42	0	-0.38	-2	-0.89	-1	-0.55
45*	Proactive involv&enga of stakeholders requires too much effo	45	1	0.42	2	0.50	1	0.32

QANALYZE was completet at 11:09:46