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Exploring the Values of a Sustainable Project Manager

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Abstract: An important project management trend today is Sustainable Project Management. The project manager plays a pivotal role in the sustainability of his/her project, and studies into the stimulus of project managers for sustainability show that the project manager's intended behavior with regards to sustainability in and of the project is mainly driven by his/her personal attitude towards sustainability. Sustainability is therefore considered a personal trait. The study reported in this article investigates how the values that are underlying to this attitude are therefore a project manager's intrinsic motivation for sustainability. The study deployed a survey-based design with 116 responses, in which the correlation between a project manager's values and the motivation for sustainability was explored. The study revealed five values that are positively correlated to the motivation for sustainability and five that are negatively motivated. Values that are negatively related to the motivation for sustainability have a strong personal focus and are related to conforming to rules, whereas values that are positively related have a more social focus. The study provides guidance for organizations that aim to develop the motivation of their project managers for sustainability, and shows that sustainability is not a personal trait, but a personal value.

Keywords: sustainability; project management; attitude; sustainable project management

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1. Introduction

Sustainability is one of the key areas of business concern today [1]. The concept of sustainability is receiving increasingly more attention, and companies are pressured to broaden their accountability from economic performance for financial shareholders to sustainability performance for all stakeholders [2]. Companies are therefore integrating sustainability strategies into their own business vision, mission, and strategy [3]. This transition of business practices towards more sustainable ones requires the changing of products, services, processes, policies, and resources of organizations [4]. As projects are temporary organizations that realize change in organizations [5], projects and their management are considered "a way to sustainability" [6].

The instrumental role of projects in an organization's, and thereby society's, transition towards sustainability impacts the way projects are planned, organized, performed, and managed [7]. The consideration of sustainability is getting integrated into the project management discipline [4,6], resulting in sustainability being a new "school of thought in project management" [8]. As a result, 'green' or 'sustainable' project management is considered to be one of the most important global project management trends today [9,10].

Sustainable project management in essence is about behavior [11], and as the project manager plays a pivotal role with regards to the sustainability of a project [12], several studies have been done regarding the sustainable behavior of project managers [13,14] and the factors stimulating this [15–18]. From these studies, it was concluded that the intrinsic motivation of the project managers, resulting from their attitude towards sustainability, was the dominant stimulus for the intention to consider the sustainability of the project, and

that this motivation was not related to the type of industry the project was performed in, the type of project, the strategy of the organization, and other contextual factors. Magano et al. [18] confirm the conclusion of Marnewick et al. [16] that "sustainability is a personal trait based upon the individual's attitude towards sustainability". In other words, the person makes a difference with their attitude towards sustainability.

These conclusions imply that organizations that aim to transition towards sustainable business practices should consider the attitudes towards sustainability of their project managers, and if possible, develop this attitude. In order to understand how the attitude towards sustainability can be developed, the study reported in this article aims to explore how the personal attitude towards sustainability, and thereby the intrinsic motivation of project managers, is developed. The research question was formulated as: How is the personal attitude towards sustainability, and thereby the intrinsic motivation of project managers for sustainability, developed? By exploring the formation of a project manager's attitude towards sustainability, the study aims to contribute to the emerging body of knowledge on the 'human factor' in sustainable project management and specifically to the understanding of the behavioral aspects of it. The study addresses the gap that exists in current literature with regards to the factors stimulating sustainable behavior of the project manager.

The remainder of the paper is structured into five chapters. The next section will provide some background on studies related to sustainability behavior. Section 3 outlines the research strategy used in this study and describes the instrument developed for this purpose. Following this, Section 4 presents the findings of the study and a discussion, while Section 5 provides the conclusions.

2. Literature Review

2.1. Sustainable Project Management

Sustainable Project Management is defined as "the planning, monitoring and controlling of project delivery and support processes, with consideration of the environmental, economical and social aspects of the life-cycle of the project's resources, processes, deliverables and effects, aimed at realizing benefits for stakeholders, and performed in a transparent, fair and ethical way, that includes proactive stakeholder participation." [19]. The definition emphasizes that sustainable project management is not only about managing sustainable projects. Rather, it involves the integration of sustainability aspects into project management processes and execution, ensuring sustainable management of projects [19]. According to multiple authors, the sustainability viewpoint requires a shift in project management focus from managing time, budget, and quality to managing the social, environmental, and economic impact of both the project content and process [4,20]. According to Silvius and Schipper [19], a shift in the mindset of project managers is necessary to successfully integrate sustainability into project management.

The shift in mindset refers to the project manager's responsibility for the impact of the project under their management [4]. Several authors have examined the project manager's accountability for the project's sustainability [4,21,22]. Their findings suggest that the discussion should focus on the responsibility that the project manager undertakes for the sustainability of the project, rather than on formal responsibility alone [4]. Even though the project manager may not have formal responsibility for some content aspects of the project, they are still in a favorable position to have a significant influence on the project's sustainability and project management. With the increasing emphasis on sustainability in professional codes of conduct and standards (such as [23,24]), it is questionable whether the project manager can disregard their responsibility to exert such an influence in order to make their project more sustainable [4]. Hwang and Ng [25] go as far as to suggest that the project manager must manage the project in the most effective and efficient manner possible, taking sustainability into account.

2.2. Sustainability in Behavior

Given that sustainable project management is primarily concerned with the behavior of the project manager [11], it became relevant to study the stimulus of sustainable behavior of project managers. Most studies investigating the incorporation of sustainability in individual behavior have focused on consumer behavior (for example, [26–29]); however, some studies focused on sustainability-friendly behavior with the context of an organization [30,31]. In recent years, researchers such as Silvius and Schipper [15], Poon and Silvius [17], Marnewick et al. [16], and Magano et al. [18] have investigated the factors that stimulate project managers to consider sustainability in their projects.

The majority of these studies have adopted the Theory of Planned Behavior (TPB) [32] as their theoretical framework. TPB is an extension of the Theory of Reasoned Action [33] and is the dominant theoretical approach in behavior studies, aimed at better comprehending, characterizing, and ultimately predicting individual behavior by connecting beliefs to behavioral intent. According to TPB, (intended) human behavior is influenced by three types of beliefs:

- Behavioral beliefs: beliefs about the potential outcomes of behavior and the evaluations of these outcomes.
- Normative beliefs: beliefs about the expected social norms and the motivation to adhere to them.
- Control beliefs: beliefs about the presence of factors that can facilitate or hinder the execution of the behavior and the perceived influence of these factors.

When taken together, these beliefs contribute to an individual's behavioral intention [32]. Generally, a more positive attitude and subjective norm, as well as a higher perceived level of control, lead to a stronger determination to carry out the intended behavior.

Silvius and Schipper [15] conducted a TPB-based study to explore the factors that stimulate project managers to consider sustainability, and they identified three distinct patterns of project managers' reactions to sustainability stimuli, labeled as "Intrinsically motivated", "Task-driven", and "Pragmatic". The first pattern, "Intrinsically motivated", describes project managers who address sustainability because they have a personal concern for the environment and feel a moral obligation to do so. Their motivation is dominated by behavioral beliefs and strongly influenced by their attitude towards sustainability. The second pattern, "Task-driven", includes project managers who consider sustainability when it is required or rewarded. Their motivation to consider sustainability is mostly driven by normative and control beliefs, and they respond to external pressure or rewards. The last pattern, "Pragmatic", refers to project managers who are not particularly self-motivated to consider sustainability but will do so if they see practical benefits. Their motivation is mostly driven by control beliefs, and they are stimulated by practical knowledge, tools, and results.

Following up on this study, two quantitative studies have been published that build upon the three above listed stimulus patterns of project managers [16,18]. These studies were aimed at creating a more in-depth understanding of the three patterns. Regarding the distribution of the three categories, both Marnewick et al. [16] and Magano et al. [18] found that project managers are predominantly categorized as intrinsically motivated when it comes to integrating sustainability in their projects. In both studies, the pragmatic and task-driven patterns closely followed in second and third place. Table 1 provides an overview of the findings of the two studies.

The two studies came to the same conclusion that the stimulus pattern for project managers' consideration of sustainability was not dependent on the types of projects they were involved in. While certain stimulus patterns were found to be more prevalent in certain industries, these findings were not consistent across both studies. Interestingly, there was no significant difference in the distribution of the three patterns among different age groups or other demographic factors, despite commonly held beliefs about the values of younger generations. As a result, both studies concluded that a project manager's

personal attitude towards sustainability was the primary driver of their intended behavior towards sustainability in the project. Marnewick et al. [16] therefore concluded that a project manager's behavior with regards to sustainability is most of all "a personal trait".

Table 1. Representation of the stimulus patterns.

Stimulus Pattern	Study of Marnewick et al. [16] *	Study of Magano et al. [18]
Intrinsically motivated	72.3%	61.9%
Pragmatic	12.9%	21.0%
Task-driven	10.9%	17.1%

* In this study, 3.9% of participants could not be allocated to one of the patterns.

This concurs with the view that sustainable project management requires a mind shift of the project manager [19]; a change of "self-identity" as Ruepert et al. [30] describes it. However, it also creates the need to understand how this attitude towards sustainability is formed.

2.3. Attitude Formation

An attitude can be defined as "an individual's disposition to react with a certain degree of favorableness or unfavorableness to an object, behavior, person, institution or event—or to any other discriminable aspect of individual's world" [34]. Since the 1960s, a lot of research has been done trying to determine how attitudes are formed. The starting point of most analyses and research was the model of attitude offered by Rosenberg and Hovland [35]. This model describes that an attitude about an object consists of modus between cognition, affection, and conation about that object. In later research, based on this model, the expectancy-value model of attitudes [33] was developed. The expectancy-value model was created to explain and predict an individual's attitudes toward objects and actions. The theory states that attitudes are developed from beliefs people hold about the object of the attitude. In other words, we form beliefs about an object by associating it with certain attributes [33].

Fishbein et al. [33] emphasized the cognitive structures as determinants of a person's attitude. However, a few years later, several researchers demonstrated the impact of affection on attitude [36]. They found that both cognitive structure and affect predict attitude [36]. These results suggest that cognitions may not always be central determinants of attitude.

Even though the studies referenced above were widely recognized and used within the domain of social psychology, another stream of literature focused on a different way attitudes are developed. This literature focuses on the existence of a value-attitude-behavior hierarchy, in which attitudes are formed based on values people hold. This value-attitude-behavior hierarchy is visualized in Figure 1 [37].

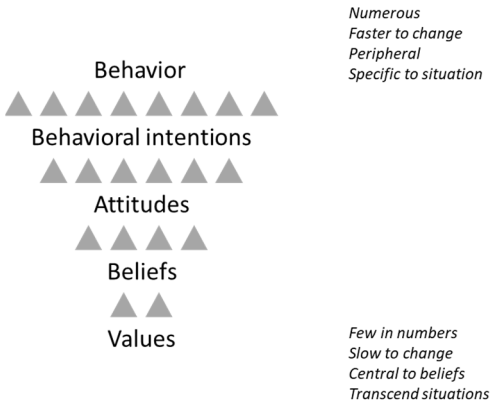

Figure 1. A value-attitude-behavior model (derived from [37]).

A value can be described as "an enduring belief that a specific mode of conduct is personally or socially preferable to an opposite or converse mode of conduct or end state of existence" [38]. Values should be differentiated from personal traits in the sense that they are "learned beliefs" [39] and therefore can be trained or developed. Values represent social cognitions that facilitate adaptation to one's environment [40]. Because values are the most abstract of the social cognitions, they reflect the most basic characteristics of adaptation and serve as prototypes from which attitudes and behavior are manufactured [37]. Cognitions, and therefore values, also guide individuals about which situations to enter and about what they do in those situations [40].

Within this stream of literature, there are many examples of the influence of values on attitudes and the existence of a value-attitude-behavior hierarchy. Research by Homer and Kahle [40] showed that values have a notable influence on attitudes, and within the hierarchy model, values are predicted to influence a person's attitudes [40,41]. These findings were further confirmed when researching attitudes towards recycling [42], genetically modified food [43], e-shopping [44], natural resource issues [37], and wildlife preservation [41]. According to research, values play a functional role in forming attitudes towards new or emerging attitude objects, especially those related to the environment [45]. Understanding environment-related behaviors is heavily reliant on values [46]. A values-attitude-behavior hierarchy has been demonstrated in researching the causes of environmentally responsible behavior, and it has been confirmed that individuals develop attitudes towards emerging attitude objects by considering their values and beliefs about the consequences of their actions [45].

2.4. Values Framework

Over the last three decades, a significant amount of literature has emerged supporting the idea that individuals possess a relatively constant set of universal values, which they use to assess objects, events, individuals, and themselves, as well as to select and defend actions [47]. Due to their stability and centrality in an individual's cognitive structure, values play a functional role in determining the significance of a situation, aiding individuals in making more efficient decisions [46]. This is particularly crucial when dealing with a new attitude object.

Schwartz made a significant contribution to the definition of values. In 1987, he conducted the initial study to develop a comprehensive collection of universal values [48]. After several follow-up studies, he identified 10 types of universal values within and across cultures that can be used to establish value preferences. In 2012, he further refined these universal values into a set of 19 distinct values [49]. Table 2 presents these values, which are also visualized in Figure 2.

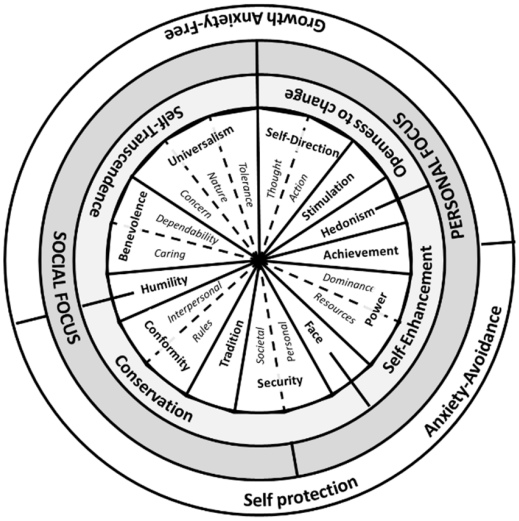

Figure 2. Circular motivational continuum of 19 values [49].

Table 2. The universal values of Schwartz [49].

Value	Description
1 Self-Direction–Thought	freedom to cultivate one's ideas and abilities.
2 Self-Direction–Action	freedom to act as one wishes.
3 Stimulation	pursuit of pleasant excitement, novelty, and change.
4 Hedonism	pursuit of pleasure and sensuous gratification.
5 Achievement	success according to social standards.
6 Power–Dominance	controlling others and imposing one's will on them.
7 Power–Resources	obtaining wealth and material goods.
8 Face	protecting one's public image and avoiding humiliation.
9 Security–Personal	safety for self and dear ones in the immediate environment.
10 Security–Societal	safety and stability in the wider society rather than personal safety.
11 Tradition	maintaining cultural, family, or religious traditions.
12 Humility	avoiding self-promotion and being satisfied with what one has but not in compliance with formal rules.
13 Conformity–Rules	compliance with rules, laws, and formal obligations.
14 Conformity–Interpersonal	avoiding actions that might upset or harm others rather than obeying formal rules.
15 Universalism–Nature	working to preserve the natural environment against threats.
16 Universalism–Concern	commitment to equality and justice.
17 Universalism–Tolerance	accepting and understanding those with lifestyles and beliefs different from one's own.
18 Benevolence–Caring	devoting oneself to the welfare of ingroup members.
19 Benevolence–Dependability	being reliable when called upon.

As previously noted, values play a functional role in shaping attitudes towards new or emerging attitude objects, particularly those within the environmental domain [45]. Values were found to be critical in understanding environment-related behaviors [46]. It is then of no surprise that research pointed out that sustainability is a value-based concept [1]. Many researchers considered ethical and social values in their studies for sustainability in project management [4,50–52]. In addition, Sustainable Development is regarded as a concept that is based on values, requiring a match between the values held by the organizations with those of the individuals who are engaged in the project. Key values such as ethics, openness, social sensitivity, fairness, integrity, transparency, traceability, respect, efficiency, participation, and learning provide a solid foundation for Sustainable Development [53].

3. Research Strategy

3.1. Conceptual Model

As sustainability is a value-driven concept, and with the use of the value-attitude-behavior model, the focus of this research is on an attitude being developed through the 19 values of Schwartz [49]. These 19 values serve as basis for the conceptual model of this research, which will be used to determine how the personal attitude of intrinsically motivated project managers towards sustainability is developed.

The conceptual model for this research consists of independent variables and a dependent variable. The independent variables correspond to the 19 values from the study by Schwartz [49]. The dependent variable concerns the intrinsic motivation of the project manager towards sustainability. The conceptual model is shown in Figure 3.

Based on the literature, the study used the overall hypothesis that the intrinsic motivation for sustainability has a positive correlation with personal values of the project managers. This overall hypothesis was operationalized in 19 sub-hypotheses, corresponding with the 19 values of the conceptual model. So, for example, sub-hypothesis 12 stated that the intrinsic motivation for sustainability of project managers has a positive correlation with the value of humility.

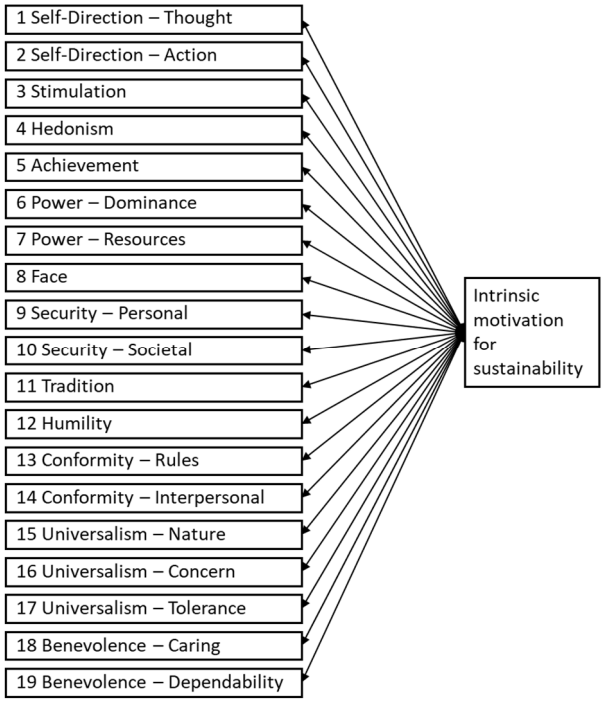

Figure 3. Conceptual model of the study.

3.2. Research Approach and Survey

The aim of the research is to determine which values relate to the intrinsically motivated project managers on sustainability. The study used a survey-based research design with quantitative data collection, based on the conceptual model (Figure 3).

The independent variables, the 19 universal values, were operationalized in the same way as in the study of Schwartz [49]. The 19 values were measured by having the respondents classify them on a 9-point scale going from '1—not important' to '8—of supreme importance' and '0—opposed to my values'. The dependent variable, the attitude of the intrinsically motivated project managers towards sustainability, was operationalized by using the same survey questions as in the study of Marnewick et al. [16].

As the study aims to reveal the values of the project managers that are intrinsically motivated to consider sustainability, the study also needed to determine the stimulus pattern of the respondent. This was done by asking the respondents to rank-order the 12 defining statements used in the studies of Marnewick et al. [16] and Magano et al. [18], and to derive a 'fit' score of this ranking for an individual respondent with each of the three stimulus patterns, Intrinsically Motivated, Pragmatic, and Task Driven. These fit scores were then added to the research data in order to enable further analysis.

Following the studies of Marnewick et al. [16] and Magano et al. [18], this study also classified the respondents in one of the three stimulus patterns, Intrinsically Motivated, Pragmatic, or Task Driven, based on their best 'fit' with one of the patterns. The survey also included a number of demographic questions on the education, gender, experience, sector, region, and age of the respondents.

3.3. Data Collection and Sample

The survey was designed as a self-administered online survey. In the survey, the English language was used. Since no list exists of suitable project managers, the researchers opted for non-probability sampling. The aim of the non-probability sampling approach was to get a representative sample. Convenience sampling was used by using personal and social networks of the researchers. Snowball sampling was also used by inviting respondents to forward the survey link to other eligible project managers. Data collection took place over a time period of 8 weeks in July and August 2022. A total of 116 complete responses

were received, which, with an unknown population of project managers, corresponds with a margin of error of 9.1% on a standard 95% confidence interval.

In the analysis of the survey data, seven respondents were removed from the sample based on the fact that they had indicated to have no experience as a project manager. The total number of respondents whose data is analyzed is therefore 109. The demographics of the sample are presented in Table 3.

Table 3. Overview of the sample.

Topic	Answers	Percentage
Gender	Male	70.6%
	Female	29.4%
Experience	0–1 years	7.3%
	1–10 years	59.6%
	11–20 years	17.4%
	>20 years	15.6%
Age	<25 years	2.8%
	25–34 years	39.4%
	35–44 years	23.9%
	45–54 years	22.0%
	55–64 years	10.1%
	>65 years	1.8%
Education degree	Secondary school/High school	1.8%
	Secondary Vocational Education	5.5%
	Higher Professional Education (Bachelor's degree)	40.4%
	Scientific/Academic Education (Master's degree or higher)	52.3%
Industry	Agriculture	11.0%
	Industrial	15.6%
	Energy	8.3%
	Construction	8.3%
	Health care	3.7%
	Wholesale and retail	1.8%
	Logistics	2.8%
	Finance	2.8%
	Real Estate	0.9%
	Human Resources	2.8%
	IT and Communications	6.4%
	Management consultancy	4.6%
	Public sector	13.8%
	Education	4.6%
	Other	12.8%
Type of project	Building/Construction	29.4%
	Organizational change	15.6%
	Information Technology	10.1%
	Research & Development	6.4%
	Engineering	15.6%
	Events	1.8%
	Other	21.1%
Budget size	<$1 Million	33.9%
	$1–10 Million	41.3%
	$11–100 Million	15.6%
	>$100 Million	9.2%
Geographical region	Europe	70.6%
	North America	11.9%
	South America	0.9%
	Asia	3.7%
	Middle East	9.2%
	Africa	2.8%
	Australia	0.9%

The sample was male-dominated (78% of respondents), which is not surprising, given that the project management discipline is still dominated by men [54]. After removing the respondents without any experience as a project manager, 109 respondents remained, of which the majority (59.6%) had 1–10 years of experience. This indicates that the sample was relatively young, which is confirmed by the age demographics that show that the largest age group in the sample (39.4%) was between 25–34 years of age. However, the fact that 57.8% of the respondents were 35 years or older still provides confidence that the sample is still in line with the population of project managers. Additionally, the demographic data on the educational levels of the respondents are in line with what is usually found in project management studies [55].

Regarding the work environment of the respondents, all sectors are represented by the respondents, with the agricultural, industrial, and public sectors having the largest number of respondents. For the reliability of the research, the broad representation of industry sectors is positive. The types of projects are also broadly distributed among the respondents, with the traditionally well-represented project types being well represented: Building and Construction (36%), Engineering (16%) and Organizational Change (16%). The sample represented a diverse set of project sizes, with most of the projects in the work environment of the respondents (77%) having a size of $10 million or less, indicating that the sample was not dominated by large or mega infrastructure projects. Respondents in the sample came from all regions of the world, with an overrepresentation of Europe (72%). This is probably due to the fact that the research was Europe-based, but with an international outreach.

Given the demographics of the sample, the research team concluded that there is no reason to assume that the sample is not representative for the population of project managers.

3.4. Data Analysis

The questions on the respondent's personal values were analyzed using an 'intervallist' approach, in which data collected with an ordinal scale are processed as interval data [56]. The collected data was analyzed using SPSS. For determining the correlation and significance between the values and intrinsic motivation, Pearson's correlation tests were performed and scatterplots with regression lines were developed.

4. Findings

4.1. Patterns of Stimulus

Table 4 shows the representation of the stimulus patterns in the sample.

Table 4. Representation of the stimulus patterns.

Stimulus Pattern	Representation in the Sample
Intrinsically motivated	69.7%
Pragmatic	11.0%
Task-driven	19.3%

The representation of the patterns is in line with the studies by Marnewick et al. [16] and Magano et al. [18], with only the task-driven pattern scoring somewhat higher. This strengthened the confidence that the sample was representative for the population of project managers as found in other studies.

Figure 4 shows the 'fit' scores of the respondents with the intrinsic motivation stimulus pattern. The distribution of the scores provides a good basis for the analysis of the correlation of this score with the values.

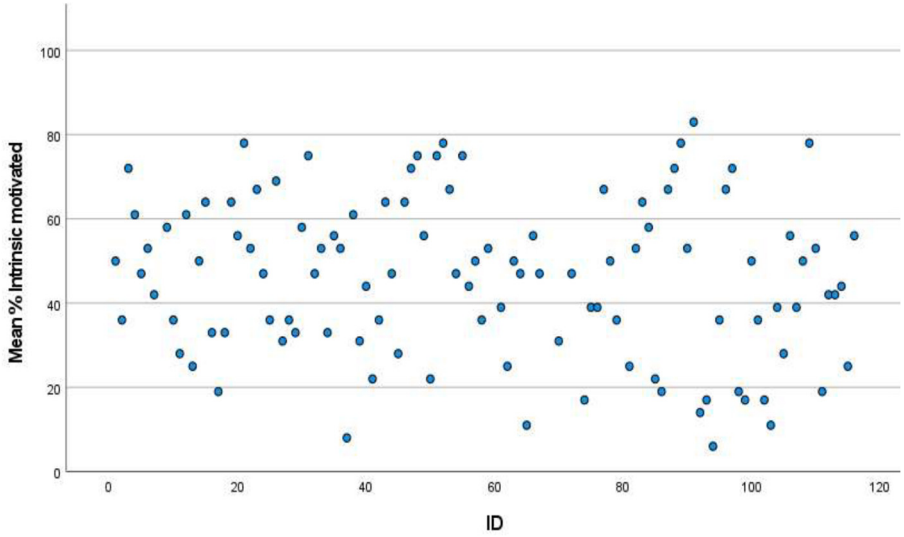

Figure 4. Intrinsic motivation scores of respondents.

4.2. Values

Table 5 shows the respondents' ratings of values. The values are ordered on the average of the degree of importance. This ranking provides an overview showing which values are most and least important to the respondents.

Table 5. The importance of universal values as indicated by the project managers.

Value	Description	Minimum	Maximum	Mean	Standard Deviation
9 Security–Personal	safety for self and dear ones in the immediate environment.	0	8	7.26	1.182
19 Benevolence–Dependability	being reliable when called upon.	0	8	7.23	1.345
16 Universalism–Concern	commitment to equality and justice.	2	8	7.04	1.130
1 Self-Direction–Thought	freedom to cultivate one's ideas and abilities.	0	8	6.82	1.285
15 Universalism–Nature	working to preserve the natural environment against threats.	2	8	6.70	1.364
10 Security–Societal	safety and stability in the wider society rather than personal safety.	0	8	6.35	1.595
2 Self-Direction–Action	freedom to act as one wishes.	0	8	6.30	1.808
17 Universalism–Tolerance	accepting and understanding those with lifestyles and beliefs different from one's own.	2	8	6.23	1.425
3 Stimulation	pursuit of pleasant excitement, novelty, and change.	0	8	6.21	1.546
18 Benevolence–Caring	devoting oneself to the welfare of ingroup members.	0	8	6.04	1.677
13 Conformity–Rules	compliance with rules, laws, and formal obligations.	0	8	5.88	1.682
14 Conformity–Interpersonal	avoiding actions that might upset or harm others rather than on obeying formal rules.	0	8	5.59	2.065
4 Hedonism	pursuit of pleasure and sensuous gratification.	0	8	5.50	1.762
8 Face	protecting one's public image and avoiding humiliation.	0	8	5.30	1.956
11 Tradition	maintaining cultural, family, or religious traditions.	0	8	5.25	2.104
5 Achievement	success according to social standards.	0	8	5.00	1.895

Table 5. *Cont.*

Value	Description	Minimum	Maximum	Mean	Standard Deviation
12 Humility	avoiding self-promotion and being satisfied with what one has but not in compliance with formal rules.	0	8	4.54	2.007
7 Power–Resources	obtaining wealth and material goods.	0	8	4.30	2.062
6 Power–Dominance	controlling others and imposing one's will on them.	0	8	2.42	2.087

It is interesting to see that the 'power' values score the lowest importance, especially 'power–dominance'. Figure 5 shows the importance scores (blue line), plotted on the values model of Schwartz [49].

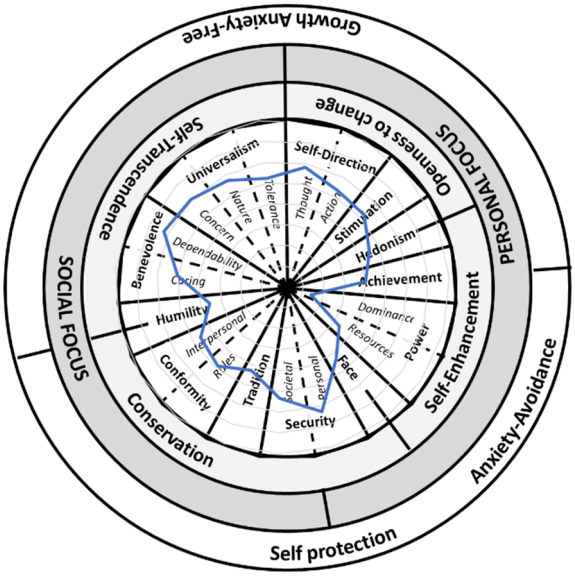

Figure 5. The importance of the values for the respondents plotted on the model by Schwartz [49].

From this visualization, it shows that the highest scoring values are 'universalism', 'benevolence,' and 'security,' all representing more of a social focus than a personal focus.

4.3. Correlations of Values and Intrinsic Motivation

The goal of the correlation analysis was to analyze whether there is a positive correlation between the values the project managers hold and the intrinsic motivation towards addressing sustainability in their project. Table 6 summarizes the results of the analysis. The results are sorted from the most positive correlation to the most negative correlation. Significant correlations are colored: green for significant positive correlations and red for significant negative correlations. The lighter colors indicate values that showed a correlation significant at the 0.05 level (2-tailed), and the more intense green and red colors indicate values that showed a correlation significant at the 0.01 level (2-tailed).

Table 6 shows that 10 values show a statistically significant correlation between the importance of values and the intrinsic motivation of project managers. Of these 10 values, there are five values with a positive correlation and five values with a negative correlation (at the 0.05 significance level). The correlations can be considered weak to moderate. At the 0.01 significance level (2-tailed), five values show a moderate correlation.

Table 6. Correlation of values with intrinsic motivation for sustainability.

Value	Description	Pearson Correlation (r)	Significance (2-Tailed)
15 Universalism–Nature	working to preserve the natural environment against threats.	0.331 **	<0.001
16 Universalism–Concern	commitment to equality and justice.	0.260 **	0.006
14 Conformity–Interpersonal	avoiding actions that might upset or harm others rather than on obeying formal rules.	0.238 *	0.013
9 Security–Personal	safety for self and dear ones in the immediate environment.	0.218 *	0.023
10 Security–Societal	safety and stability in the wider society rather than personal safety.	0.189 *	0.049
2 Self-Direction–Action	freedom to act as one wishes.	0.168	0.081
17 Universalism–Tolerance	accepting and understanding those with lifestyles and beliefs different from one's own.	0.106	0.272
19 Benevolence–Dependability	being reliable when called upon.	0.096	0.344
12 Humility	avoiding self-promotion and being satisfied with what one has but not in compliance with formal rules.	0.071	0.466
18 Benevolence–Caring	devoting oneself to the welfare of ingroup members.	0.068	0.483
11 Tradition	maintaining cultural, family, or religious traditions.	0.004	0.964
1 Self-Direction–Thought	freedom to cultivate one's ideas and abilities.	−0.043	0.659
3 Stimulation	pursuit of pleasant excitement, novelty, and change.	−0.161	0.095
6 Power–Dominance	controlling others and imposing one's will on them.	−0.177	0.065
13 Conformity–Rules	compliance with rules, laws, and formal obligations.	−0.202 *	0.035
4 Hedonism	pursuit of pleasure and sensuous gratification.	−0.296 **	0.002
8 Face	protecting one's public image and avoiding humiliation.	−0.313 **	<0.001
5 Achievement	success according to social standards.	−0.342 **	<0.001
7 Power–Resources	obtaining wealth and material goods.	−0.374 **	<0.001

* Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed).

The correlations have also been visualized in scatterplots with regression lines. When combining the results of these regression lines with the results of the Pearson's correlation tests, the results for the correlation between the two variables can be summarized into three categories:

1. Positive correlation;
2. Negative correlation;
3. Values with no or little correlation.

These three categories and their values are described below.

4.3.1. Category 1: Positive Correlation

The first category of values has a statistically significant positive correlation between the importance of the value and the intrinsic motivation of the project manager. The correlation is weak to moderate, as they are between 0.189 and 0.331.

The values in this category are:

- Value 15 Universalism–Nature: Working to preserve the natural environment against threats;
- Value 16 Universalism–Concern: Commitment to equality and justice;
- Value 14 Conformity–Interpersonal: Avoiding actions that might upset or harm others rather than obeying formal rules;
- Value 9 Security–personal: Safety for self and dear ones in the immediate environment;
- Value 10 Security–societal: Safety and stability in the wider society rather than personal safety.

The more important the values are considered, the more the project manager is intrinsically motivated to apply sustainability in his projects. Additionally, the more a project manager is intrinsically motivated, the more important he/she finds these values. Values 15 and 16, both related to universalism, were found to have the strongest correlation with the project manager's intrinsic motivation for sustainability, and for these two values, the correlations also showed to be significant at the 0.01 level (2-tailed).

4.3.2. Category 2: Negative Correlation

The second category of values has a statistically significant negative correlation between the importance of the value and the intrinsic motivation of the project manager. The correlation is weak to moderate, as they are between -0.202 and -0.374. The negatively correlated values are:

- Value 7 Power–Resources: Obtaining wealth and material goods;
- Value 5 Achievement: Success according to social standards;
- Value 8 Face: Protecting one's public image and avoiding humiliation;
- Value 4 Hedonism: Pursuit of pleasure and sensuous gratification;
- Value 13 Conformity–Rules: Compliance with rules, laws, and formal obligations.

Except for value 13, all these values were found to have correlation significant at the 0.01 level (2-tailed). The more important the values are considered, the less the project manager is intrinsically motivated to address sustainability in their projects. Additionally, the more a project manager is intrinsically motivated, the less important he finds these values.

4.3.3. Category 3: Values with No or Little Correlation

The third category of values is formed by values that show no or very little correlation with the intrinsic motivation of the project manager. Within this category, three subcategories can be identified.

3a: Values with no or little correlation, but almost always deemed important

This sub-category of values has no or very little correlation with intrinsic motivation, as these values are almost always deemed important by the project managers, independent of their level of intrinsic motivation. Values in this category are:

- Value 1 Self-Direction–Thought: Freedom to cultivate one's ideas and abilities;
- Value 2 Self-Direction–Action: Freedom to act as one wishes;
- Value 3 Stimulation: Pursuit of pleasant excitement, novelty, and change;
- Value 17 Universalism–Tolerance: Accepting and understanding those with lifestyles and beliefs different from one's own;
- Value 18 Benevolence–Caring: Devoting oneself to the welfare of ingroup members;
- Value 19 Benevolence–Dependability: Being reliable when called upon.

3b: Values with no or little correlation, but almost never deemed important

This sub-category of values is more or less the opposite of sub-category 3a above, as the value in this sub-category is almost never deemed important by the project managers, independent of their level of intrinsic motivation. The only value for which this applies is:

- Value 6 Power–Dominance: Controlling others and imposing one's will on them.

3c: Values with no correlation and scattered datapoints

The final sub-category of values that showed no significant correlations with intrinsic motivation of the project managers consists of values that simply did not show any coherent pattern. Unlike the values in the sub-categories 3a,b, the data points of the values in this sub-category were completely scattered. Values in this category are:

- Value 11 Tradition: Maintaining cultural, family, or religious traditions;
- Value 12 Humility: Avoiding self-promotion and being satisfied with what one has but not in compliance with formal rules.

4.4. Analysis for Correlations with Demographic Data

The relationships between the values and the project manager's intrinsic motivation for sustainability were also examined for differences resulting from the demographics of the respondents. Only in the comparison between the genders of the project managers were statistically significant differences found. These differences between the genders appear with the following values.

- *Value 3 Stimulation: Pursuit of pleasant excitement, novelty, and change.*

For this value, there is only a statistically significant moderate negative correlation found between the importance of the value and the intrinsic motivation of female project managers. For the male project managers, no statistically significant correlation was found.

- *Value 4 Hedonism: Pursuit of pleasure and sensuous gratification.*

For this value, there is only a statistically significant moderate negative correlation found for male project managers. For the female project managers, no statistically significant correlation was found.

- *Value 5 Achievement: Success according to social standards.*

For this value, there is a statistically significant negative correlation found for both genders of project managers. The main finding here is that the correlation for female project managers (-0.468) is stronger than for male project managers (-0.272). The statistical significance for female project managers is also below 0.01, while this is below 0.05 for male project managers.

- *Value 6 Power–Dominance: Controlling others and imposing one's will on them.*

For this value, there is only a statistically significant weak negative correlation found for male project managers. For the female project managers, no statistically significant correlation was found.

- *Value 7 Power–Resources: Obtaining wealth and material goods.*

For this value, there is a statistically significant negative correlation found for both genders of project managers. The main finding here is that the correlation for female project managers (-0.502) is stronger than for male project managers (-0.315). For both genders, the statistical significance is below 0.01.

- *Value 8 Face: Protecting one's public image and avoiding humiliation.*

For this value, there is a statistically significant negative correlation found for both genders of project managers. The main finding here is that the correlation for female project managers (-0.391) is stronger than for male project managers (-0.276). The statistical significance for female project managers is also below 0.01, while this is below 0.05 for male project managers.

- *Value 9 Security–Personal: Safety for self and dear ones in the immediate environment.*

For this value, there is only a statistically significant weak positive correlation found between the importance of the value and the intrinsic motivation of male project managers. For the female project managers, no statistically significant correlation was found.

- *Value 14 Conformity–Interpersonal: Avoiding actions that might upset or harm others rather than obeying formal rules.*

For this value, there is only a statistically significant moderate positive correlation found for female project managers. For the male project managers, no statistically significant correlation was found.

- *Value 15 Universalism–Nature: Working to preserve the natural environment against threats.*

For this value, there is a statistically significant moderate positive correlation found for both genders of project managers. The statistical significance for male project managers is, however, below 0.01, while this is below 0.05 for female project managers.

- *Value 16 Universalism–Concern: Commitment to equality and justice.*

For this value, there is only a statistically significant moderate positive correlation found for male project managers. For the female project managers, no statistically significant correlation was found.

From this analysis, it may be concluded that there are differences in the values of male and female project managers. This is not surprising, as Dawson [57] and Walker et al. [58] also concluded differences in the values of men and women. In the context of the intrinsic motivation for sustainability, however, these differences result for the values that are negatively correlated with an intrinsic motivation for sustainability in a stronger negative correlation for women compared to men. For the positively correlated values, the outcomes are less clear.

4.5. Discussion

The study's findings on the stimulus patterns of the project managers are in line with the results of the studies of Marnewick et al. [16] and Magano et al. [18]. In all three studies, approximately 70% of the respondents are intrinsically motivated, and with this it is the most dominant pattern of the three. Additionally, the initial study of Silvius and Schipper [15] found a similar distribution of patterns. The conclusion that the majority of project managers is intrinsically motivated for sustainability strengthens the relevance of understanding how this motivation is formed and, as the value-attitude-behavior model of Vaske and Donnelly [37] shows that behavior and behavioral intent is based on the values of the individual, which values are behind this motivation.

The study reported in this article found that of the 19 universal values identified by Schwartz [49], 10 values have statistically significant weak to moderate correlations with the intrinsic motivation of the project manager. Of these 10 values, five values showed a positive correlation and another five a negative correlation. Table 7 presents an overview of these values. Again, the lighter colors indicate values that showed a correlation significant at the 0.05 level (2-tailed), and the more intense green and red colors indicate values that showed a correlation significant at the 0.01 level (2-tailed).

In Figure 6, these three categories of values (values that are positively correlated, values that are negatively correlated, and values that are not correlated) are graphically plotted on the model of Schwartz [49] with the positively correlated values indicated in green and the negatively correlated values indicated in red. Additionally, in this figure, the lighter colors indicate values that showed a correlation significant at the 0.05 level (2-tailed), and the more intense green and red colors indicate values that showed a correlation significant at the 0.01 level (2-tailed).

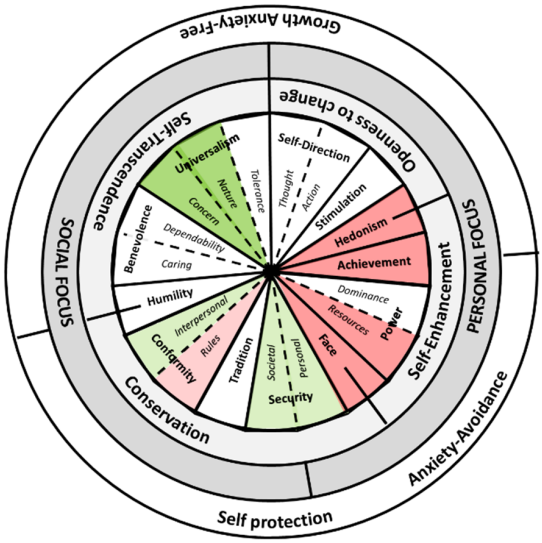

Figure 6. The significantly correlated values plotted on the model by Schwartz [49].

Table 7. Overview of values and their correlation with a project manager's intrinsic motivation for sustainability.

Values That Positively Correlate with Intrinsic Motivation for Sustainability	Values That Not Significantly Correlate with Intrinsic Motivation for Sustainability	Values That Negatively Correlate with Intrinsic Motivation for Sustainability
15 Universalism–Nature: working to preserve the natural environment against threats.	2 Self-Direction–Action: freedom to act as one wishes.	7 Power–Resources: obtaining wealth and material goods.
16 Universalism–Concern: commitment to equality and justice.	17 Universalism–Tolerance: accepting and understanding those with lifestyles and beliefs different from one's own.	5 Achievement: success according to social standards.
14 Conformity–Interpersonal: avoiding actions that might upset or harm others rather than on obeying formal rules.	19 Benevolence–Dependability: being reliable when called upon.	8 Face: protecting one's public image and avoiding humiliation.
9 Security–personal: safety for self and dear ones in the immediate environment.	12 Humility: avoiding self-promotion and being satisfied with what one has but not in compliance with formal rules.	4 Hedonism: pursuit of pleasure and sensuous gratification.
10 Security–Societal: safety and stability in the wider society rather than personal safety.	18 Benevolence–Caring: devoting oneself to the welfare of ingroup members.	13 Conformity–Rules: compliance with rules, laws, and formal obligations.
	11 Tradition: maintaining cultural, family, or religious traditions.	
	1 Self-Direction–Thought: freedom to cultivate one's ideas and abilities.	
	3 Stimulation: pursuit of pleasant excitement, novelty, and change.	
	6 Power–Dominance: controlling others and imposing one's will on them.	

From this visualization, it shows that the values 'universalism' (significant on the 0.01 level) and 'security' (significant on the 0.05 level) are positively correlated with the intrinsic motivation for sustainability, whereas the values 'face', 'power', 'achievement', and 'Hedonism' are negatively correlated (significant at the 0.01 level). The value 'conformity' shows a mixed pattern in which interpersonal conformity is positively correlated and rules conformity is negatively correlated (significant on the 0.05 level).

Reflecting on these outcomes, it is not surprising that the values that are negatively related to the motivation for sustainability have a strong personal focus and are related to conforming to rules. This may indicate that organizations with a strong emphasis on individual performance are fostering a culture that does not stimulate a motivation for sustainability, just as an emphasis on compliancy, with regards to sustainability, also does not stimulate this motivation. This indication can also be understood from the work of Tulder et al. [59] that elaborates on the holistic changes that are needed within an organization in order to enable its transition towards a sustainable enterprise. The values that are positively related to the motivation for sustainability have a more social focus.

Elaborating on the view that individual values are influenced by the culture in which the individual works and lives [60], another reflection is how national cultures play a role in the values of an individual. According to Hofstede, there are fundamental differences in cultures and values between geographical regions and countries [61]. When relating the dichotomy personal focus–social focus to Hofstede's theory of national cultures, a similarity with the Hofstede variable 'individualism' (individualism vs. collectivism) can be observed. The concept behind this variable implies that in societies deemed highly individualistic, people have a weaker sense of social connection and are expected to prioritize their own interests and those of their immediate family. Conversely, in "collectivist" cultures, individuals are part of strongly cohesive groups with a strong sense of loyalty that lasts a

lifetime. In individualistic cultures, the adherence to time, punctuality, and schedules is considered crucial, while in collectivistic cultures, personal relationships and connections take precedence. Elaborating on the correlation pattern our study found, and the similarity with the 'individualism' variable of Hofstede, a hypothesis on the relationship between a society's score on individualism and the motivation for sustainability can be developed. Societies with a high score on individualism (such as the United States, Australia, and the United Kingdom) might foster a culture that is not stimulating a motivation for sustainability, whereas societies that are characterized by low individualism (such as many South American and African countries and Japan) might foster a culture that does stimulate sustainability. As national cultures also reflect in organizational cultures, this again is something to be aware of.

An interesting finding from the study is also that the negative correlations are stronger than the positive correlations. Contrary to expectations, the values with a negative correlation therefore play a greater role in developing the intrinsic motivation of project managers than the values with a positive correlation. In line with this, Silvius and De Graaf [14] found that the sustainable behavior of the project manager is, next to his/her attitude towards sustainability, also strongly influenced by the fear that the consideration of sustainability might have negative consequences for the relationship of the project manager with the project owner.

From the analysis of correlations of the results of the study with the demographic data of the respondents, only in the comparison of the genders were statistically significant differences were found. Overall, it was found that the values of female project managers are more supportive of an intrinsic motivation for sustainability than the values of male project managers. Although our study did not show a correlation between gender and intrinsic motivation, the study of Marnewick et al. [16] did show a higher percentage of intrinsically motivated female project managers than of male project managers.

From a research perspective, a reflection on this study is that the research into sustainable project management is wandering into very different disciplines. This might be attributable to the multidisciplinary nature of both sustainability and project management. The study of the integration of sustainability into project management therefore requires a multidisciplinary approach [7].

5. Conclusions and Recommendations

5.1. Conclusions

The aim of the study reported in this article is to gain insight into how the intrinsic motivation of project managers is developed and to advise companies on ways in which they can strengthen or influence this intrinsic motivation. The initially formulated research question was: How is the personal attitude towards sustainability, and thereby the intrinsic motivation of project managers for sustainability, developed? In the study, we adopted the value-attitude-behavior theory of Vaske and Donnelly [37] that suggests that attitude and (intended) behavior results from the personal values of the individual. In order to investigate which values relate to an intrinsic motivation for sustainability of project managers, we tested the correlations of the 19 universal values of Schwartz [49] with the intrinsic motivation of the project managers in the sample.

The findings of the study show that intrinsic motivation originates from values that are or are not considered important by the project managers. From the results of the correlation tests, it can be concluded that the values can be divided into three categories.

- *Values that positively correlate with the intrinsic motivation of the project manager*

Values that showed a statistically significant correlation with the intrinsic motivation of project managers to consider sustainability are: 15 Universalism–Nature, 16 Universalism–Concern, 14 Conformity–Interpersonal, 9 Security–personal, and 10 Security–Societal. Although the correlations of these values are weak to moderate, this implies that the more the project managers find these values important, the more intrinsically motivated they are.

- *Values that negatively correlate with the intrinsic motivation of the project manager*

The second category is the direct opposite of the first category. The values 7 Power–Resources, 5 Achievement, 8 Face, 4 Hedonism, and 13 Conformity–Rules show a statistically significant weak to moderate negative correlation between the values and intrinsic motivation of project managers. The more important these values are to a project manager, the less intrinsically motivated he/she is.

- *Values with no or little correlation with the intrinsic motivation of the project manager*

The third category of values shows no significant correlation with the intrinsic motivation of the project manager. Values in this category are 2 Self-Direction–Action, 17 Universalism–Tolerance, 19 Benevolence–Dependability, 12 Humility, 18 Benevolence–Caring, 11 Tradition, 1 Self-Direction–Thought, 3 Stimulation, and 6 Power–Dominance. Even though no correlation and significance were found for these values, the results do show that some values within this category are found important or not important by almost all project managers.

These conclusions on the correlation of each universal value with the intrinsic motivation to consider sustainability of the project manager confirm or reject the corresponding 19 sub-hypotheses that operationalize the main hypothesis of the study: the personal values of the project managers have a positive correlation with the personal attitude of intrinsically motivated project managers towards sustainability.

With this conclusion, we can correct Marnewick et al. [16] that a project manager's behavior with regards to sustainability is most of all "a personal trait". Values should be differentiated from personal traits [39], so we conclude that a project manager's behavior with regards to sustainability is most of all a personal value.

The study also found that there are significant differences between the values of male and female project managers and their motivation for sustainability. For male project managers, status and power appeared to be more important than for female project managers.

5.2. Limitations

The first limitation to the study is by nature provided by the sample size. The study collected and analyzed the responses of 109 project managers, which is less than the targeted sample size. The demographics of the sample, nevertheless, showed a 'normal' demographic pattern, which strengthens the confidence in the representativeness of the sample.

The self-administered survey that the study deployed also created a limitation. First of all, the survey was developed and tested using a computer. The link for completing the survey was then also distributed via the computer and the previously mentioned channels. However, more and more people are using their phones. After distribution, a few participants informed the researcher that some questions of the survey were not easy to answer because of the lack of overview. Additionally, the researcher received some feedback that the survey sometimes crashed on a phone and the participants had to refresh the survey a few times or needed to answer it on a computer.

It might be commented that the prior knowledge on sustainability of the respondents provides a potential bias in the sample. Project managers that already have a good understanding of sustainability and are confronted with the topic in their daily work may be more inclined to participate in a study like this, as compared to project managers without any prior knowledge on sustainability. The researchers attempted in their data collection to prevent this bias, and no indications of this bias have appeared; however, no guarantee can be given that this sampling bias has not appeared, which provides another limitation to the study.

A visible bias in the sample is the overrepresentation of Europe, compared to, for example, Asia and Africa. Based on the earlier discussed expected influence of regional and national cultures on individual values, and vice versa, it cannot be excluded that the sample provides a bias here. A more regionally representative sample of project managers may therefore provide better representativeness and could lead to better insights.

5.3. Recommendations

In order to develop the intrinsic motivation of project managers, which was found to be the most decisive factor stimulating their sustainability behavior, it can be recommended to consider the values of these individuals.

For values with a positive correlation, it is recommended to stimulate them, keep them central in the organization, and to actively invest in them. This research confirms that more focus on these values leads to a higher intrinsic motivation of project managers. Active investment must be made in this area, for example, by undertaking projects or activities to create a safe working environment (values 1 and 10), investing in nature preservation (value 15), or promoting equality. Such examples include setting up programs to improve equality in accordance with new EU legislation [62], implementing the Safety Culture Ladder, or making the company more sustainable. Conducting research into the impact of business operations (value 14) and then acting on it is another example that can be performed. There are many examples for stimulating values with a positive correlation, but it is difficult to come up with very specific advice here. It differs per company how they should deal with this. Each value can vary per organization. The only specific advice that can be given is to put the values in the context of the business and subsequently examine where improvement is necessary. After this, company-specific improvement projects or programs can be started, in whatever capacity and size, to implement these identified improvements.

For values with a negative correlation, it is also recommended to actively deal with them. They are not to be stimulated at all or can be used in a way to enhance the values with a positive correlation, for example, using the value of 'obtaining wealth' (value 7) to invest more into the value for 'preserving the natural environment' (value 15). Value 7 is considered unimportant by the more intrinsically motivated project managers. Although this value is considered unimportant, an organization must make money; otherwise, it has no business continuity. In order to give substance to this in a positive way, an organization can find a balance between earning money and investing in their people and the environment in accordance with the Triple Bottom Line concept [63]. Obtaining wealth does then not become a goal in itself, but a way to reinforce the other components of people and planet.

For values with a positive and negative correlation, it is also recommended that companies speak out publicly about what they consider important and not important. In order to achieve intrinsically motivated employees, it is important that people can identify themselves with the company they work for [64]. By clearly speaking out as a company about what the company stands for and what it values, it is easy for people who work there to identify themselves with this. Knowing the values also makes it easier to attract people who share the same philosophy. They will identify and commit to the company more easily [63].

5.4. Further Research

The study reported in this article aimed to contribute to emerging literature on 'the human factor' of sustainable project management by exploring the relationship between personal values and a project manager's intrinsic motivation for sustainability. Given the European biased sample of the study, a follow up study could be oriented at exploring these values in other geographical regions, such as Asia and Africa.

Given the earlier discussed relationship between culture and values, a further direction for research would be the relationship between organizational culture, values, and motivation for sustainability. This recommendation is based on the assumption that not only national culture, but also organizational culture, influences an individual's values.

Another area for future research might be oriented towards the development of these personal values. "Personal values are learned beliefs about preferred ways of acting or being" [39] and therefore can be trained and developed. However, more research is

needed on the success of programs that aim to stimulate or change personal values of adult professionals.

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