

## Conceptualizing the Relationship between Personal Values and Sustainability—A TMO Case Study

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### ABSTRACT

Sustainability is associated with many contemporary challenges facing society prompting sustainability initiatives and research in this field. An emerging strand of research has sought to investigate sustainability as a function of values. Given that values determine and predict perceptions, attitudes and behaviors, understanding employees' underlying values would provide important insights on how values relate to sustainability-related actions. However, there is a gap in knowledge around individual actors' roles as influencers or change agents for sustainability particularly in a construction project context. Drawing on values theory, this exploratory research addresses this gap by conceptualizing the relationship between personal values and sustainability performance. A Temporary Multiple Organization (TMO) (a major infrastructure project in the UK) was used as the case study. An adapted version of Schwartz Value Survey (SVS) was used to measure and analyze the personal values of employees with professional and managerial roles. Statistical and multidimensional scaling analysis were deployed to analyze the responses. Given the lack of theory and research in a construction management context the potential significance and implications of the findings were explored and analyzed by drawing on existing empirical studies around values. This enabled the development of six theoretical concepts (‘\_Feeling of Oneness’, ‘\_Moral Obligation’, ‘\_Creativity’, ‘\_Challenge’, ‘\_Change’ and ‘\_Compliance’) latterly expressed as propositions. This novel conceptualization has the potential to explain and articulate the relationship between personal values and sustainability performance. This research has both practical and theoretical implications, as it is the first to explain the role of personal values in enabling projects to deliver sustainability in a TMO context.

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### 1. INTRODUCTION

Sustainability underpins many challenges facing society (UN Sustainable Development Goals 2019) and by extension, industry (Kiviläet al.2017). Whilst ongoing research is attempting to explore sustainability in a range of contexts, many argue that more is needed to understand the factors that contribute to and explain project and organizational sustainability (e.g., Zhao et al.2012; Florea et al.2013). Part of the argument is to consider sustainability as a function of values (e.g., Garriga and Melé 2004; Pfeffer 2010) rather than focus on outcomes and actions as the ‘\_unit of analysis’ (Holdgate 1996). Notably, values as the ‘\_unit of analysis’ to explain sustainability is gaining purchase (e.g., Van Marrewijk and Werre 2003; Planko and Gilbert 2012).

Values are typically defined as ‘\_conceptions of the desirable that guide the way social actors select actions, evaluate people and events, and explain their actions and evaluations’ (Schwartz 1999, p. 24). Broadly, peoples’

common values, beliefs and assumptions underpin what may be perceived as organizational cultures (Schneider1987), and are considered fundamental to the success and sustained performance of organizations (Watrous et al.2006;Zhang et al.2008). Understanding the values people hold reveals fascinating insights regarding processes, practices and actions. Yet, from sustainability standpoint, the role of individual actors, their values and relationships to action are typically ill-defined (Ng and Burke2010;Florea et al.2013). This is especially problematic in a Temporary Multiple Organization (TMO) (Dubois and Gadde2000) that constitutes a diverse set of people, companies, disciplines, objectives, interests and values (Cherns and Bryant1984;Fellows and Anita2008;Brady and Davies2014;Mok et al.2015), all of which may change over the lifetime of a project (Van Marrewijk2007). The inherent values diversity within a TMO can cause tension and influence people's actions (Herazo and Lizarralde2016) and performance around multiple measures including sustainability. Attempts to exploring the role of values within a TMO, and how they shape and influence sustainability, is theoretically novel. By using a major infrastructure project in the UK as the empirical setting, this paper describes research that has sought to analyze and explore the values of project actors (n = 176) to develop new explanations for the role of values in developing and delivering sustainability in TMOs.

The paper is structured around a review of values literature to underpin the choice of using values surveys, followed by an explanation of the survey instrument and its adoption to reveal the value priorities in this TMO case study. A subsequent review and analysis of literature provides the basis for explaining the potential relationships between values and sustainability performance using six theoretical concepts (articulated as propositions). Finally the paper provides conclusions of relevance for both academics and practitioners.

## 2. PERSONAL AND ORGANIZATIONAL VALUES

Despite the work of scholars such as Kluckhohn(1951), Rokeach(1973) and Schwartz(1992), there is no commonly accepted definition for 'values'. They can be understood as a psychological construct or a tool to understand human behavior. Arguably only inherent to individuals, they are understood to also have organizational, social, professional or cultural dimensions (Posner2010; Horlings2015). In this sense, they are argued by Rokeach(1973) to have a 'personal focus' or a 'social focus' and by Schwartz and Bilsky(1987) as serving individuals and collectives. Whilst only then held by individuals, values have an impact beyond just the individual as the unit of analysis.

Personal values are widely regarded as relatively stable standards within individuals (e.g. Rokeach 1973; Schwartz1992; Zhang et al.2008), and will influence individual and social behavior (Schwartz 2007) as well as decision-making processes (e.g., Gandal et al.2005). They prescribe behaviors that are appropriate (Meglino and Ravlin1998; Schwartz2012). However, an appropriate behavior for one individual, group or indeed an organization may be considered inappropriate to another. Furthermore, individuals' value priorities are argued to constitute -chronic goals that guide people and thus can be considered reasonable predictors of behavior and action (Schwartz2005, p. 25).

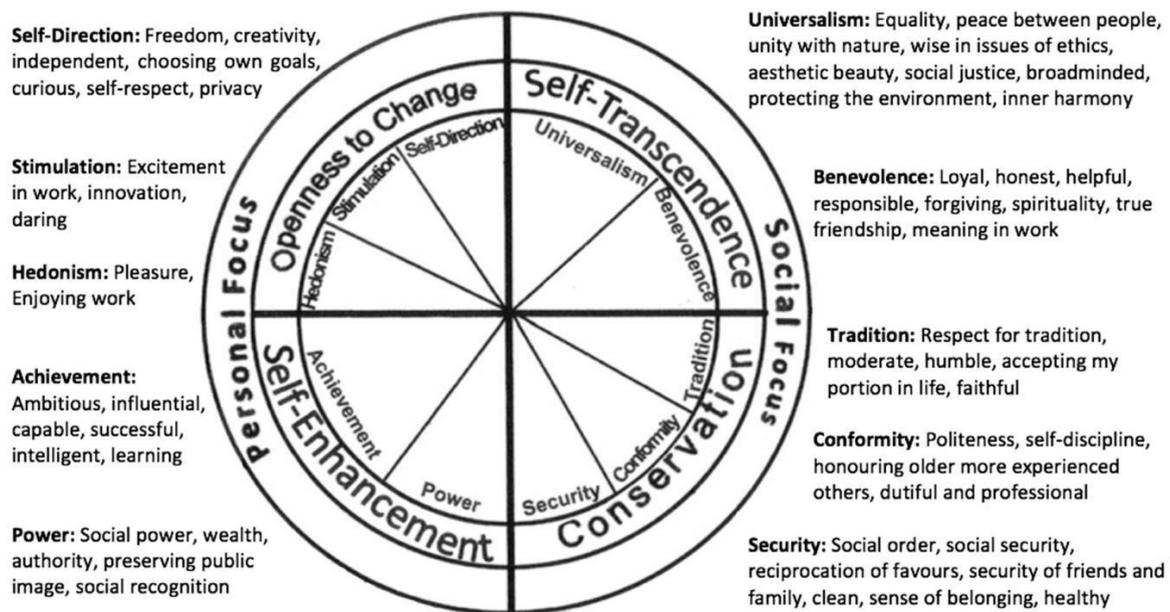
Values have also been characterized as -the most distinctive property or defining characteristic of a social institution (Rokeach1979 p.51). This underpins the notion of 'organizational values' i.e. the bonding mechanism between employees that fosters and encourages coordinated actions and behaviors to achieve common goals (Williams2002). Whilst it is argued that organizations per se do not possess values (Schneider1987) Malbašić et al.(2015, p. 438) take the view that -organizations are composed of human beings whose personal values shape the values of the organization in which they are employed. Therefore—unlike individual values that reside within a person organizational values are often considered a group product (Manz et al.2008 p. 388). In a TMO (and construction projects in general) this temporary 'group' is often in flux, changing and indeed, made up of many subgroups, each with short or medium-term objectives (e.g., achieving development consent order, in development phase) (Mok et al.2015), but collectively working towards achieving a common goal (e.g., delivering a major highways project on time, budget and quality). Hence, given the inherent multi-phase and multi-organization nature of TMOs, the alignment of values of a group in this context can be especially problematic (Thyssen et al.2010). It may however be argued that a TMO at any given phase in time is a semi-permanent organization, with values of its own, due to individuals working collectively to deliver set objectives, arguably requiring a specific set of values (Van Marrewijk2007). Alignment of individual values (i.e., value consensus) has been shown to increase predictability as employees with similar values would have similar motives, set similar goals and are likely to respond to events in similar ways (Meglino and Ravlin1998; Edwards and Cable2009). In doing so, this alignment reduces uncertainty, role ambiguity and conflict (Schwartz and Sagie2000; Watrous et al. 2006), improves communication and decision-making (Meglino and Ravlin1998). Hence, if personal values reflect (and reinforce) the actions and interests of individuals and the groups they inhabit, identifying these values and priorities can help explain, predict and potentially shape decisions, processes and actions.

However, what may appear to be a desired and harmonious environment (i.e. exhibiting signs of value consensus) may in fact be facing (or potentially developing) ‘groupthink’ conditions where individuals’ viewpoints and identities are overwhelmed by group conformity pressure (Manz and Neck1995). Groupthink has been defined as –a mode of thinking people engage in when they are deeply involved in a cohesive in-group, when the members striving for unanimity override their motivation to realistically appraise alternative courses of action (Janis1982, p. 9). As a result groupthink may result in observable consequences, leading to impaired performance and other undesirable outcomes (Aldag and Fuller1993;London and Pablo2017) such as defective decision-making (Janis1982). It is therefore important to both understand and anticipate the shared and similar features that both environments may exhibit which could have opposing outcomes with significant organizational or project impact.

There is, nevertheless, strong evidence of the underlying role and importance of values congruency between individuals and their employers (also referred to as values alignment, i.e., person-organization fit). Previous empirical studies have found that when values and priorities of employees are aligned with those of the organization, they are more satisfied and committed to their job (Meglino and Ravlin1998); have improved attitudes; have stronger identification with the organization; perceive more organizational support; and maintain their employment relationship (Edwards and Cable2009). Importantly, good alignment between personal and organizational values is considered to enhance corporate decision-making processes (Oliver1999).

Values-related research commonly takes a descriptive approach, using grouping or ranking of values to explain the importance individuals associate with values, without necessarily considering the inherent structure of value systems (i.e., those systems which may determine the relationship between values) (e.g.,Rokeach1973;Van Quaquebeke et al.2014). Many scholars have contributed to the development of theory (Meglino and Ravlin1998;Rohan2000). For example Rokeach(1973,p. 27) approach to the measurement of values asked people to arrange the value words –in order of importance to YOU, as guiding principles in YOUR life. Yet the lack of an underlying value system structure in this work made it –impossible to understand the consequences of high priorities on one value type for priorities on other value types (Rohan2000, p. 260).Schwartz(1992) theory of human values, although influenced byRokeach(1973) andKluckhohn(1951), addresses this shortcoming, defining values as –desirable, trans-situational goals, varying in importance, that serve as guiding principles in people’s lives (Schwartz and Sagiv1995, p. 93).Schwartz(1992) proposed a model arranged in a circular structure (see Figure1), which depicts ten correlated value categories (see Table1), arranged under two bi-polar dimensions (four quadrants), all of which sit under Personal Focus and Social Focus hemispheres (Schwartz2015).

**Figure1.** Circular structure of values (adapted fromSortheix and Schwartz2017), with corresponding value items (as adapted byMillset al.2009).



**Table 1.** Value categories and their defining goals (Schwartz1992).

Value Categories	Defining Goals
<b>Power:</b>	Social status and prestige, control or dominance over people and resources.
<b>Achievement:</b>	Personal success through demonstrating competence according to social standards.
<b>Hedonism:</b>	Pleasure or sensuous gratification for oneself.
<b>Stimulation:</b>	Excitement, novelty, and challenge in life.
<b>Self-Direction:</b>	Independent thought and action-choosing, creating, exploring.
<b>Universalism:</b>	Understanding, appreciation, tolerance, and protection for the welfare of all people and for nature.
<b>Benevolence:</b>	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact.
<b>Tradition:</b>	Respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provide the self.
<b>Conformity:</b>	Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms.
<b>Security:</b>	Safety, harmony, and stability of society, of relationships, and of self.

The Openness to Change vs. Conservation dimension captures the conflict between values emphasizing –independence of thought, action, and feelings and readiness for change, and values that emphasize order, self-restriction and resistance to change (Schwartz2012, p. 8). Self-Enhancement vs. Self-Transcendence dimension on the other hand captures the conflict between values emphasizing –concern for the welfare and interests of others and values that emphasize –pursuit of one’s own interests, relative success and dominance over others (Schwartz2012, p. 8). At the highest level, Personal Focused values –primarily regulate how one expresses one’s own personal characteristics and interests, and Social Focused values –regulate how one relates socially to others and preserves cooperative relations (Sortheix and Schwartz2017, p. 188). Schwartz(1992) theory, and his corresponding survey instruments (notably Schwartz Value Survey (SVS—Schwartz1992) and Portrait Values Questionnaire (PVQ—Schwartz et al.2001) have been validated globally (Schwartz2006;Schwartz2012;Rudnev et al.2018). They are considered legitimate to measure and analyze values (Mills et al.2009;Seppälä et al.2012), offering –a solid and comprehensive theoretical basis for deriving hypotheses (Seppälä et al.2012, p. 138), theorizing relations of value priorities to other variables and facilitating —interpretation of the observed relations of sets of values to other variables (Schwartz2005, p. 16). All the instruments developed by Schwartz are fundamentally underpinned and supported by his theory of human values (Schwartz1992).

PVQ was designed to —measure values in a more concrete and therefore easier way (Roccas et al. 2017, p. 16), in a –less abstract method compared to the SVS instrument (Schwartz et al.2001, p. 519). Schwartz(2005, p. 33) recommends that –the PVQ is preferable for younger ages, less Westernized and educated samples, and for others who may find the abstract items and numerical rating scale of the SVS difficult to handle. Schwartz(2005, p. 34) also found that respondents felt SVS —is a more serious measure of their values. SVS (and PVQ) have been deployed across different disciplines and in a diversity of cultural and organizational contexts to explore the relationship of personal values with a range of variables (Egri and Ralston2004), such as pro-environmental behaviour (Karp1996; Nordlund and Garvill2002), and suggestion-making at work (Lipponen et al.2008). The application of Schwartz(1992) theory in construction contexts has proved useful to:

- predict occupational safety and health motivation (using PVQ) (Manu et al.2017);
- understand value priorities and alignments to increase awareness of team dynamics and define organizational values (Zhang et al.2008);
- capitalize on personal values to deliver better value (Mills et al.2009).

The latter two items used an adapted SVS, developed by Mills et al.(2009), that improved the instrument’s applicability in construction.

Contemporary research makes strong connections between values and sustainability (Karp1996Pfeffer2010Florea et al.2013Caracciolo et al.2016).Ratner(2004, p. 60) outlined three ‘models of social action’ that represent contemporary efforts towards operationalizing and implementing sustainable development: Technical consensus (development of tools and techniques that integrate social, environmental and economic factors); ethical consensus (development of a single framework of action—a unifying ethic that serves as a guide for navigating through social conflict); and dialogue of values.Holdgate(1996, p. 138) also proposed that —sustainability is not a technical problem to be solved, but a vision of the future focusing our attention on a set of values and moral and ethical principles to guide our actions. Understanding sustainability as a ‘dialogue of values’ places an emphasis on understanding stakeholders their dynamic processes of communication and the governance that structures those processes (Ratner2004). Focusing on values as the ‘unit

of analysis' to explain sustainability has therefore gained significant attention (e.g., VanMarrewijk and Werre 2003; Planko and Gilbert 2012; Marcus et al. 2015).

In summary, personal values are thus relatively stable standards in one's life they can serve as a key predictor and determinant of attitudes and behaviors, and help to interpret value-behavior relations at personal and organizational levels. Various studies have deployed SVS and initiated a debate about the relationship between values and sustainability-related behaviors. There is a paucity of related studies within the construction management domain and a need to undertake and explore the relationship between values and sustainability, specifically within a construction TMO context.

### 3. TMO VALUES SURVEY: RESULTS AND ANALYSIS

Case studies offer —unique means of developing theory by utilizing in-depth insights of empirical phenomena and their contexts (Dubois and Gadde 2002, p. 555). In this research, a case study was selected such that values and sustainability-related behaviors could be explored, in a TMO setting, for the first time. The empirical domain of this study was a large scale TMO: A joint-venture (JV) organization, consisting of three large multi-national contractors and a client body engaged in the delivery of a major infrastructure programme. Within this larger programme of work, one particular phase/location presented a particularly interesting case for study, because this 'project' had been reported anecdotally by the TMO to be performing exceptionally well in comparison to other projects within the overall programme. Informal scoping meetings with the TMO leadership team indicated that the case had clear sustainability targets and objectives for social and economic sustainability performance and its performance was being measured and monitored using a well-established construction industry environmental assessment tool. However, the TMO leadership team appeared to be unable to explain why this particular case, within their overall programme was performing more favorably in respect of sustainability. The case thus offered an ideal setting to explore and conceptualize the relationship between values and sustainability behaviors for the first time, in a TMO setting in construction.

Data collection occurred during the construction phase, when the project population varied from 270–300. In terms of sampling, only those with professional and managerial roles were considered relevant, due to their influential role within the project. A total of 231 individuals were invited to participate (182 from the JV, and 49 from the Client) in the research. The survey instrument adopted was Mills et al. (2009) adapted version of Schwartz (1992) Value Survey (SVS). Respondents rated the importance of 56 values (divided into two lists) 'as a guiding principle in my working life' on a nine-point scale. The anchors of -1 ('opposed to my values') and 7 ('of supreme importance') were used, as recommended by Schwartz (1992).

The questionnaire surveys were coded to ensure only the invited individuals participated and that the responses received were representative of all the management levels and function groups. The survey received 176 responses (42 from the client team and 134 from the JV, response rate of 76%), reflecting the diversity within the team, in terms of both management levels (e.g., strategic and operational leadership teams) and functional groups (e.g., commercial and construction). The distribution of responses was also checked using both the project organograms (for the JV and Client teams) and the management breakdown structure, to ensure sufficient representation (approx. 70%) was achieved from each of the five broad levels of management responsibilities across the population (see Table 2). Reliability analysis was carried out for the 10 value categories and four higher-order value segments (Figure 1), suggesting internal consistency and high reliability, with Cronbach's Alpha  $\alpha = 0.889$  and  $\alpha = 0.874$ , respectively. The values data were aggregated (Schwartz 2014) and analyzed using descriptive statistics (using both IBM SPSS 23 and Excel 2016). Given the large number of variables (i.e., 56 value items), it is more helpful to explore the results at the three higher order levels particularly at the ten-category level (Figure 1) by aggregating individuals' values scores (e.g., Schwartz 1992; Meglino and Ravlin 1998; Schwartz 2012).

Ordinal multidimensional scaling (MDS) analysis was used to investigate the value profile of the project team, showing intercorrelations between values, based on Bañon Gomis et al. (2011) theory-based MDS approach and analysis steps. This has a starting configuration that allocates every value item its place within the hypothesized structure of values, and also ensures comparable outputs are achieved. Pearson correlation coefficient matrices from the absolute values scores (raw data) (Schwartz 2007) were computed, which provided the basis for the MDS. The matrices of the Pearson correlation coefficients between the value categories were analyzed using the starting configuration (defaults for ties and iteration criteria: Keep ties, stress convergence = 0.0001, minimum stress = 0.0001, maximum iterations = 100). The structural analysis of the overall (aggregated) project values and the two sub-groups (client and JV) were conducted using PROXSCAL, an MDS program in IBM SPSS 23.

**Table 2.** The distribution of survey responses across the population, categorized according to five broad levels of management responsibility.

Management Levels	%Representation		
	Client Team	JV Team	Overall
<b>Level 1—Senior Management (Strategic):</b> Exclusively concerned with strategic management and cover broad areas such as understanding and influencing the environment, setting strategy and gaining commitment, and evaluating and improving performance.	100%	100%	100%
<b>Level 2—Middle Management (Operational):</b> Concerned about operational management and apply to all senior or middle managers who are responsible for departments and/or have other managers reporting to them. These are managers who have a broad span of control, they proactively identify and implement change and quality systems, they negotiate budgets and contracts, and lead high level meetings.	100%	85%	89%
<b>Level 3—First Line Management:</b> Responsible for allocating work to others and achieving specific results through the effective use of resources. They have limited budgetary responsibility and are reactive in carrying out policy within their defined area of authority. They contribute to broader activities, such as change programmes or recruitment, rather than having full responsibility for them.	89%	82%	84%
<b>Level 4—Supervisory Management:</b> First line managers with a tightly defined area of responsibility and limited autonomy or budgetary control. Supervisors are responsible for achieving specific results by effectively allocating work and resources within their team.	82%	73%	75%
<b>Level 5—No Management:</b> Ordinary members of the team with no management responsibilities.	81%	68%	70%

The average values scores and standard deviations for the overall team and the two sub-groups (Client and JV) are presented in Table 3. Schwartz (2007) recommends using centred scores for this type of analysis. However, for illustration purposes, absolute scores were used, because centred data yielded the identical value priorities. At Schwartz's top three levels of values, the Client and JV teams have some shared values priorities. At the highest level, the overall team and the JV erred slightly towards a Social Focus, while the Client team had a Personal Focus. At the second level down, Self-Transcendence followed by Openness to Change were the most important value segments, both at the project and sub-groups level. At category level, Achievement, Conformity, Benevolence, followed by Self-Direction were the four most important values within the whole TMO, and the JV team. However, the Client team, whilst sharing the top three values, prioritized Hedonism as the fourth most important value. These priorities echo Rowlinson and Cheung (2012) findings in the Australian construction industry, where they found that professionals prioritized Benevolence, followed by Self-Direction, Achievement and Conformity.

Standard deviations provided a measure for the degree of values alignment or consensus (e.g., Schwartz and Sagie 2000; Piscicelli et al. 2015) within the TMO and its sub-groups. Consensus or alignment of values is an illustration of the agreement among individual members of a team, organization, or indeed the TMO, concerning the importance they attribute to different values. A low standard deviation indicates that the data points (i.e., the scores attributed to a value type) tend to be very close to the mean (i.e., higher alignment around its importance), whereas high standard deviation indicates that the data points are spread out over a large range of values (i.e., lower alignment) (Schwartz and Sagie 2000). This study adopts an arbitrary 1.0 threshold for standard deviations for comparison and illustration purposes; this mirrors the approach seen in Mills et al. (2009) and there is no compelling evidence in the wider values literature to have taken a different approach.

Within the TMO as a whole, and the JV team the standard deviations show a high degree of values alignment in six categories (Universalism, Benevolence, Conformity, Security, Achievement and Self-Direction). In addition, the Client team had a high degree of alignment in Power and Hedonism. There was a high degree of alignment within the project team and between the sub-groups, indicating a high level of internal

consistency increased stability and cooperation (Schwartz and Sagie 2000) and potentially a strong project performance (Watrouset al.2006).

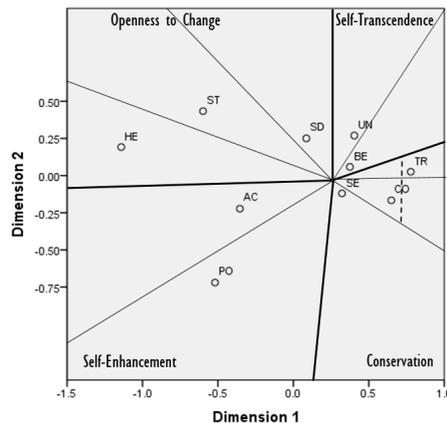
**Table 3.** Average value scores and standard deviations (SD).

Three Levels of Values	Overall Project (n = 176)		Sub-Groups (n = 176)			
	Average	SD	Client (n = 42)		JV (n = 134)	
			Average	SD	Average	SD
<b>SOCIAL FOCUS</b>	<b>4.42 *</b>	<b>0.82</b>	<b>4.15</b>	<b>0.66</b>	<b>4.50 *</b>	<b>0.85</b>
Self-Transcendence	4.52 *	0.81	4.33 *	0.71	4.58 *	0.84
Universalism	4.36	0.96	4.21	0.89	4.40	0.98
Benevolence	4.69 *	0.80	4.46 *	0.66	4.76 *	0.83
Conservation	4.33	0.92	3.94	0.76	4.45	0.94
Tradition	3.61 †	1.34	3.05 †	1.17	3.79 †	1.35
Conformity	4.83 *	0.99	4.47 *	0.96	4.94 *	0.97
Security	4.54	0.81	4.31	0.78	4.61	0.81
<b>PERSONAL FOCUS</b>	<b>4.40</b>	<b>0.76</b>	<b>4.16 *</b>	<b>0.55</b>	<b>4.47</b>	<b>0.80</b>
Self-Enhancement	4.20	0.90	3.95	0.75	4.28	0.93
Power	3.30 †	1.20	3.01 †	0.94	3.39 †	1.26
Achievement	5.11 *	0.86	4.89 *	0.74	5.17 *	0.88
Openness to Change	4.47 *	0.81	4.29 *	0.64	4.53 *	0.85
Hedonism	4.44	1.12	4.39 *	1.12	4.45	1.13
Stimulating	4.43	1.03	4.18	0.91	4.50	1.06
Self-Direction	4.55 *	0.89	4.29	0.71	4.63 *	0.92

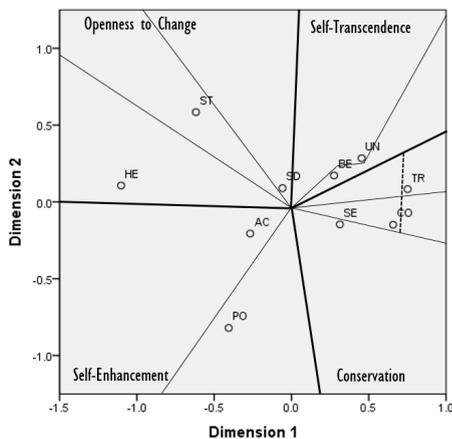
\* Most important. † Least important.

**Figure 2.** (a-c) Two-dimensional multidimensional scaling (MDS) of the overall project values data, including the sub-groups. Key to value categories: UN = Universalism, BE = Benevolence, TR = Tradition, CO = Conformity, SE = Security, PO = Power, AC = Achievement, HE = Hedonism, ST = Stimulation, SD = Self-Direction.

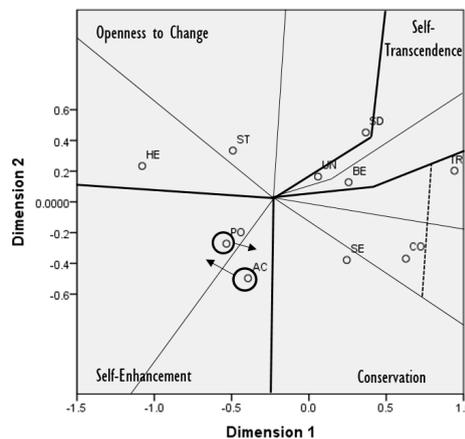
(a) Overall project (n = 176)



(b) Joint-venture (JV) sub-group (n = 134)



(c) Client sub-group (n = 42)



The MDS results for the overall TMO team and the two sub-groups are illustrated in Figure 2a–c. Figure 2a reveals that the MDS plot of the overall TMO corresponds very well to Schwartz (1992) theory (Figure 1). It also shows that Self-Transcendence and Conservation (i.e., Social Focus), along with Self-Direction are essentially a unified cluster. For the JV, whilst still conforming to Schwartz's theory, the plot (Figure 2b) illustrates that Self-Direction is very close to Self-Transcendence. This is not surprising as Self-Direction shares underlying motivations with the adjacent Self-Transcendence values (Schwartz 1992). The visual observations from the MDS plots are also helpful, as the distances represent the degree of intercorrelations between values the smaller the distance between values the more similar the two values are (i.e., the higher the correlation) and vice versa (Borg et al. 2012). The MDS plot for the Client sub-group (Figure 2c) broadly conforms with Schwartz's theory, however Achievement and Power values are out of place. This may be due to the small sample size ( $n = 42$ ). Furthermore, Bilsky et al. (2011, p. 770) note that bent lines pose no problem as long as a particular value region does not include value items of a different basic value (i.e., value category).

Overall, the MDS evidences the robustness and validity of this survey, particularly given the relatively small sample size here compared to other cross-cultural studies, where samples often run into many thousands (e.g., Bilsky et al. 2011). The findings demonstrate the applicability of the adapted SVS as a tool to measure and analyze value priorities in a complex and dynamic TMO setting. Alignment and priorities around Achievement (Self-Enhancement), Conformity (Conservation), Benevolence (Self-Transcendence), followed by Self-Direction (Openness to Change) values are potentially unique to construction, spanning all four quadrants. This may indicate the diversity of values required or indeed inherent in construction projects. Importantly Schwartz (2014) considers value priorities of individuals as observable consequences from which cultural values are inferred. Because the values of all individuals reflect the influence of the latent culture channeled through their particular exposure to societal institutions (Schwartz 2014, p. 9). Whilst such arguments may require samples from large representative samples in a society, they may however reflect the dynamic nature of this TMO project, and potentially others. For example, whilst Self-Direction motivates innovative behavior, Conformity values ensure compliance with standards and regulations, both of which constitute an integral part of a project, irrespective of its phase.

Importantly, the MDS suggests that Self-Direction values and the Social Focus (Self-Transcendence and Conservation) values appear as a unified cluster. Whilst Self-Direction values are individualistic, their correlation with Social Focused values may suggest likely characteristics inherent in the TMO team. Self-Direction values may also highlight some characteristics of construction professionals, such as their underlying motivations towards creative behaviour, innovation and coping with challenges, all of which form part of day-to-day activities in a TMO environment.

However, there remains the question of how the value priorities relate to sustainability in construction projects. Various empirical studies have used Schwartz (1992) Value Survey to relate pro-environmental behaviors (or sustainability in broader terms) to certain value dispositions. First, at segment level, Self-Transcendence values are consistently related to pro-environmental behaviors, whilst Self-Enhancement values tend to oppose such behaviors (e.g., Stern et al. 1995; Schultz et al. 2005). Karp (1996) and Caracciolo et al. (2016) have also suggested that values related to both Self-Transcendence and Openness to Change are significantly and positively related pro-environmental and sustainability behaviors. In this research, Self-Transcendence followed by Openness to Change were consistently the highest scored value segments, and their respective standard deviation indicated a high degree of alignment within the TMO team and the sub-groups (Table 3). Self-Enhancement was the least important segment (at project and JV team level). This outcome suggests that the TMO team has a tendency to behave pro-environmentally (more positively) towards sustainability initiatives.

Secondly, at category level, in this research, Achievement, Conformity, Benevolence and Self-Direction values were prioritized, showing a high degree of alignment (Table 3). Grunert and Juhl (1995) found that Self-Direction and Benevolence values were related to pro-environmental attitudes, whereas Thøgersen and Ölander (2002, p. 626) reported that only Universalism had a significant influence on such behavior. Axsen and Kurani (2013) observed broader links, connecting sustainability with three value categories (Universalism, Benevolence, and Self-Direction). Interestingly, therefore, prioritizing Self-Direction as well as Benevolence may suggest that the TMO project team has a propensity to behave pro-environmentally. Schwartz (2015) found that eliciting a high level of cooperation is associated with both high priority of Benevolence values and low priority of Power values, which may explain the internal dynamics and relationships within the TMO, particularly as Power was consistently the least prioritized value category.

While Self-Direction values motivate individuals to work productively by finding the best ways to deliver the group's tasks, and thereby contribute to its success, Achievement values — motivate individuals to invest their time and energy in performing tasks that serve group interests (Schwartz and Bardi 2001, p. 282). So, the respondents' prioritization of Self-Direction and Achievement values may express their underlying motivations to work collectively to achieve common goals, particularly if they are perceived to be 'challenging'.

Finally in exploring Social Focus vs. Personal Focus value orientations, individuals that are Social Focused are said to be more concerned about the impact of their decisions on society (e.g.,Pinto et al. 2011;Parboteeah et al.2012). Indeed sustainability has been posited as an ethical concept (e.g.,BañonGomis et al.2011) underpinned by a set of values (Ratner2004) which calls for a ‘collectivist approach’ (Fellows and Anita2008;Bocken et al.2015). In this research the TMO team was Socially Focused with a high degree of alignment suggesting a strong propensity to support sustainability initiatives.

While the analysis provides insights on the alignment and priorities of values within the TMO it does not explain in detail how values are related to sustainability. This is due in part to the lack of previous values-related sustainability research but also the deficit of well-defined theoretical constructs for the multi-stakeholder construction TMO project context. The next section begins to explain this phenomenon using previous empirical research by identifying six concepts each expressed through a proposition which when combined have the potential to help understand the relationship between personal values and sustainability.

**4. CONCEPTUALIZING THE RELATIONSHIP BETWEEN VALUES AND SUSTAINABILITY**

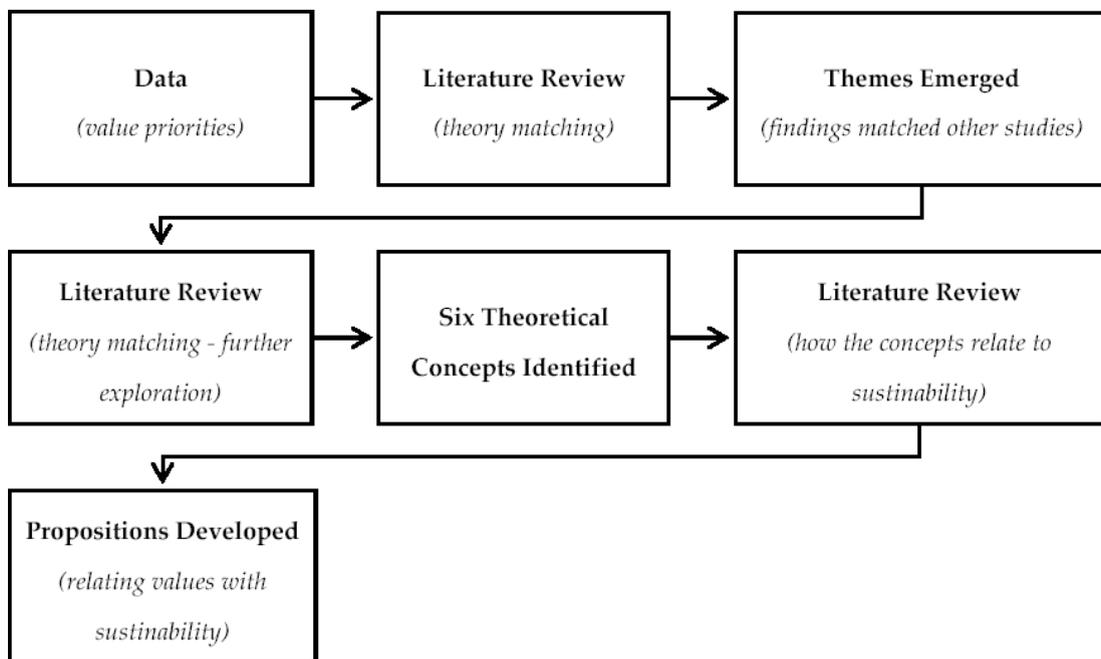
A comprehensive review of the literature was carried out to explore the potential implications and significance of the values survey findings the new phenomenon (i.e., value priorities) in light of previous empirical studies (such asDubois and Gadde2002). This enabled the development of new theory in the form of propositions (Andreewsky and Bourcier2000).

The process involved the search for studies with similar findings to this study which have adopted Schwartz(1992) theory (and corresponding instruments e.g., SVS, PVQ). A range of empirical studies including cross-cultural personal and organizational values studies, consumer and employee attitudes and behaviors and personal and organizational psychology related studies were identified. The search included studies from diverse contexts, to provide specific means to explore the potential significance of the survey findings, and enable us to develop new theory but also to compensate for the lack of a strong related literature base within the construction management research domain.

The search used databases such as ‘Google Scholar’ and ‘Scopus’. Combinations of different terms were used as search strings, e.g., -Self-Direction| + -Schwartz| + -values| + |theory| and -Conformity|+ -Schwartz| + -values|. Searches were repeated to identify literature at the interstices of other key terms such as -sustainability|, -pro-environmental behavior|.

The exploratory nature of the search and lack of extant theory pertaining to the phenomenon under investigation both suggested that fixing a date range would be inadvisable in this study. No date range restriction was therefore imposed on this search, thus capturing relevant empirical studies up to mid-2019 when the study was undertaken.

**Figure 3.** An overview of the process undertaken to develop the propositions.



As part of this exercise, all relevant findings were broadly categorized according to Schwartz's top three levels of values (see Figure 1). The findings were analyzed and some broad themes tentatively began to emerge. This provided a more structured understanding of the likely significance of the value priorities. The findings were subsequently organized into six distinct themes (which were later referred to as concepts). A further comprehensive search of the literature identified a number of important empirical studies, which helped to further articulate the six identified concepts.

Whilst the potential significance of the value priorities was identified (e.g., Openness to Change values may highlight the team's propensity to behave in a creative manner), however, no direct link to sustainability was found. On that basis further search was conducted to explore the potential link and relationship of each concept with sustainability. This process identified a range of studies suggesting potential links between each of the six concepts with sustainability in a range of contexts e.g. 'creativity is strongly related to operationalizing sustainability'.

Figure 3 provides an overview of the process undertaken. Drawing on these findings, six unique concepts (expressed as proposition) were identified, which help to explain and articulate the relationship(s) between values and sustainability performance. These are described next.

#### 4.1. *Concept One: "Feeling of Oneness"*

From the survey data the TMO team and JV sub-group prioritized Social Focused values. This orientation has been related to the promotion of inclusivity, cooperation and acceptance of diversity and reduction of conflict (e.g., Chatman et al. 1998). Pinto et al. (2011) stated that social-oriented people are more concerned about the impact of their decisions on society and Fellows and Anita (2008, p. 223) argued that 'behaviour founded in individualistic values cannot foster sustainability and so a collectivist approach is essential'.

Broadly Social Focused values or collectivism 'involve cooperation and solidarity, and the sentimental desire for warm 'feeling of oneness' with fellow members of one's group' (Lebra 1976, p. 25). This concurs with Randall (1993, p. 93) argument that 'one would anticipate greater affective attachment (a sense of loyalty) to institutions in collectivist cultures'. Indeed Singh and Winkel (2012, p. 470) argued that 'the feeling of oneness engenders integration with organizational goals, motivates individuals to contribute to those goals and to indulge in behaviors that serve their groups'. As a result a 'feeling of oneness' and relationship between Social Focused values and sustainability performance can be summarized as:

**Proposition 1.** Individuals' sense of a 'feeling of oneness' in, and with the project encourages and supports a collective approach in delivering sustainability.

#### 4.2. *Concept Two: "Moral Obligation"*

There is a recognized relationship between moral obligation and pro-environmental behaviors (Kaiser and Shimoda 1999; Berenguer et al. 2005; Dolnicar and Leisch 2008), and a feeling of moral obligation has also been related to certain value dispositions Pearson et al. (2008) contend that these underpin reciprocal complimentary and collective actions, and that obligations in socially-oriented organizations help to develop commitment and foster relationships. Moral obligation is 'an individual's perception of the moral correctness or incorrectness of performing a behavior' (Conner and Armitage 1998, p. 1441); it represents 'personal feelings of responsibility to perform or refuse to perform a certain behaviour' (Ajzen 1991, p. 199) and as such influences behaviors with an ethical or moral dimension (Conner and Armitage 1998). Nordlund and Garvill (2002, p. 752) found that individuals prioritizing Self-Transcendent values were 'more aware of the threats to the environment and perceived a stronger moral obligation to act to protect the environment than individuals who gave priority to self-enhancement values'. Indeed, Self-Transcendence was prioritized in the TMO project, and this echoes research by Pearce and Gregersen (1991) and Hoon and Tan (2008, p. 95) who note that 'the greater the felt responsibility that one has toward one's work co-workers, and organization the more one will engage in behavior that serves the purpose of enhancing such performance'. Hence 'moral obligation' can explain the relationship between Self-Transcendence values and sustainability performance, and can be expressed as:

**Proposition 2.** The collective and coordinated actions, arising from individuals' feelings of moral obligation (or duty orientation/felt responsibility) towards their project can help deliver better performance around sustainability.

#### 4.3. *Concept Three: "Creativity"*

Creativity enables organizations to remain competitive, respond to opportunities, adapt to and overcome challenges, in a rapidly changing business environment (Sousa and Coelho 2011). Creativity features heavily in construction professions and projects, contributing to novel ideas (Damci et al. 2017), and plays out in a context associated with 'complexity, high and often irreducible uncertainty and contested values' (Miller et al. 2014, p. 240). Within this, sustainability is a learning process (Vare and Scott 2007): When creative individuals cope with such ambiguous, novel, and ill-defined problems, they tend to demonstrate 'strong achievement motives, substantial self-confidence, tolerate ambiguity, display an interest in learning, and show substantial openness and

flexibility (Mumford 2000, p. 317). Given that the TMO team is social focused, the strength of Achievement and Self-Direction values (at category level), and Openness to Change and Self-Transcendence values (at segment level) may evidence a propensity to behave in a creative manner. This echoed Chatman et al. (1998) and Dollinger et al. (2007), who make an explicit connection between creativity and Openness to Change and Self-Transcendence. Furthermore Rice (2006) noted that creative individuals prioritized Self-Direction and Achievement values. As a result, ‘creativity’ captures the relationship between Achievement and Self-Direction (and Openness to Change and Self-Transcendence) values and sustainability performance, and summarized as:

**Proposition 3.** Encouraging and supporting creativity in project environments and individuals’ propensity to behave in a creative manner may help improve the sustainability performance of projects.

#### 4.4. *Concept Four: “Challenge”*

Sustainability is often presented as ‘a challenge’ (see Speelman et al. 2007; Bocken et al. 2015; Nguyen et al. 2016) including in construction (Abbas et al. 2009), e.g., understanding how sustainability connects with project costs client and customer requirements (Opoku and Ahmed 2014), and achieving ratings on sustainability assessment schemes (Schweber 2013). Dahl (2012, p. 18) suggests that sustainability is —fundamentally an ethical challenge and so must also be addressed at the levels of people’s values. If so, then individuals’ motivations in dealing and coping with such challenges can be related to certain value dispositions, such as Achievement and Self-Direction (Axsen and Kurani 2013). Arguably then, the alignment of and priorities given to Self-Direction and Achievement values in the survey reinforce the notion that construction professionals share underlying motivations to work on and deal with challenging endeavors (Adams and Felder 2008). It also suggests that the TMO team is able to, and has the underlying motivations, to work in challenging environments to deliver challenging tasks, not least of which are those relating to sustainability. Hence ‘challenge’ is the fourth concept which explains the relationship between Achievement and Self-Direction values and sustainability performance. This may be summarized as

**Proposition 4.** Construction professionals are motivationally driven to work on and deal with challenging endeavors some of which may be associated with meeting challenging sustainability objectives or achieving aspirational targets.

#### 4.5. *Concept Five: “Change”*

The construction industry is known to be accustomed to a traditional way of working, hence change is generally considered as a slow process (Porwal and Hewage 2013). Values play an important part in leading change (e.g., Crant 2000) and in particular, for sustainability (Doppelt 2017). Behaviour toward change may therefore be personally motivated, serving as an important goal, which stimulates ‘change-oriented behavior’ (Seppälä et al. 2012). Change oriented behaviors are –constructive efforts by individuals to identify and implement changes with respect to work methods, policies, and procedures to improve the situation and performance (Choi 2007, p. 469).

In predicting ‘change-oriented organizational citizenship behavior’, Seppälä et al. (2012, p. 148) found that employees who highly identify with their teams express their Openness to Change values by suggesting ideas for improvements and execute these ideas only when they perceive a sense of empowerment in their workplace. Fischer and Smith (2006) found that prioritizing Openness to Change values was related with higher reported ‘proactive behavior’ (e.g., personal initiative<sup>3</sup> and voice behavior<sup>4</sup>), i.e., –taking initiative in improving current circumstances, which –involves challenging the status quo rather than passively adapting to present conditions (Crant 2000, p. 436). Given the priority and alignment around Openness to Change (and Self-Direction) values in this research, this may suggest that the project team has been provided a high degree of flexibility to try or suggest new ideas (Bertels et al. 2010), encouraged to challenge the status quo (Laszlo 2003), and perceive a sense of empowerment in the project (Spreitzer 1995). This emphasizes the role of Openness to Change (and Self-Direction) values in predicting such behaviors. So, ‘change’ is identified as a means of explaining a relationship between Openness to Change (and Self-Direction) values and sustainability performance, and summarized as:

**Proposition 5.** Individuals’ tendency to take initiatives, be proactive, and participate in suggestion-making as part of their role, to change and challenge the status quo, is instrumental in enhancing the sustainability performance of projects.

#### 4.6. *Concept Six: “Compliance”*

Compliance, from an organizational perspective —has traditionally been understood as conformity or obedience to regulations and legislation (Interligi 2010, p. 235), and —their internalization in individual behaviour (Braun et al. 2012, p. 273). Compliance refers to –behaviour directed to the organization, such as attendance and obedience to rules that goes beyond minimum required levels (Fischer and Smith 2006, p. 545). As noted by Chwartz (2009, p. 232), –people who attribute high importance to conformity values are especially sensitive and vulnerable to social norms and constraints. This may imply that organizations with strong norms

and constraints (e.g., in the form of rules, regulations and/or strong vision and aspirations around sustainability), are likely to benefit from employees who attribute high importance to Conformity values to undertaken certain roles/tasks. Many studies have associated sustainability with compliance; for instance Pedersen et al.(2016, p. 4) characterize conformity as –the dominant approach to corporate sustainability. Within construction, sustainability practices entail compliance with rules and regulations (e.g.,Tan et al.2011).Adkisson (2009, p. 25) states that –strict sustainability requires adherence, not only to environmental criteria, but also to technological and social criterial, whereasKensbock and Jennings(2011, p. 499) argue that –true sustainability requires adherence to sound ethical rulesl. Hence, enacting sustainability in construction does not only entail compliance per se, but may also involve going beyond what is expected. As a result, ‘\_compliance’ is the sixth and final concept, linking Conformity values and sustainability performance. This may be summarized as:

**Proposition 6.** Individuals’ propensity to conform to rules, regulations and guidelines; and exceeding mere compliance would enhance sustainability performance of projects.

## 5. DISCUSSION

The survey data and MDS analysis helped to explain the alignment of values and priorities within the case study TMO but did not explain how these values are related to sustainability performance. This is due to the lack of previous values-related research on the multi-stakeholder construction TMO project context. Hence the need to explain this phenomenon in light of extant literature. The process identified a diverse range of empirical research which enabled conceptualizing the relationship of personal values with sustainability performance.

Clear synergies were found with extant empirical research helping with the identification and characterization of the six concepts (each expressed as a proposition) which have both practical and theoretical implications. Collectively, the findings provide a broad overview and a structured approach in understanding the fundamental drivers for sustainability in projects. Whilst extensive research has been attributed to the development and use of various instruments and assessment tools to measure and analyze sustainability performance in construction projects (e.g.,Ding2008), the concepts developed in this study provide an alternative perspective by addressing sustainability through the lens of values, emphasizing the role of individual actors (via attitudes and behaviors) as drivers or change agents for sustainability.

The concepts reflect the diversity of the value priorities found in this study and their relationship to sustainability-related attitudes and behaviors. Furthermore, the concepts not only prescribe what values and behaviors are important, but also highlight the need to design/adapt a project environment that reinforces such mode of conduct, to enable project actors manifest their values in pursuing better sustainability performance.

Theoretically, the concepts attend to an evident gap in knowledge by better articulating the underlying relationship between personal values with sustainability-related behaviors, albeit this is limited to a TMO context. Practically, however, the concepts may have the following, more generalizable, implications at project level, i.e., they have the capacity to:

- use values to achieve sustainability-related behaviors to better harness individual and collective concern for sustainability, for example by developing a socially-focused culture to encourage and foster cooperation and collaboration.
- provide the means to review and develop organizational mechanisms (e.g., structures, systems and procedures) that enable and promote desired attitudes and behaviors. For example, developing and implementing practices and processes (e.g., workshops, competitions) that both encourage and continually reinvigorate and reinforce creativity.
- provide a shared and consistent understanding of the required attitudes and behaviors (e.g., developing a common code of behavior) throughout the project life cycle, potentially creating an enduring culture which fosters sustainability initiatives.
- provide practical means and robust criteria for decision-making, facilitating early engagement with project teams and stakeholders, and ensuring there is an alignment of values across the project to serve common goals.

### *Limitations of the Research*

As this research was based on data from a single TMO case, the findings are clearly not generalizable. This was an exploratory study, aiming to explore the underlying role and relationship of values with sustainability, adding to that body of knowledge, but importantly extending the application of Schwartz’s values theory into a novel context, i.e., the TMO. Hence, the aim of the research was not to generalize the findings, rather it was to generate theory that can be further tested and explored in subsequent research with for example larger samples, more case studies, or indeed TMO cases from other industrial sectors or geographical settings.

The survey instrument used was a slightly adapted version of Schwartz(1992) Value Survey (SVS) by Mills et al.(2009). Whilst the adaptations were primarily around the language used (i.e., to ensure contextually-congruent terminologies were selected for ease of participation), unlike the original SVS, this version, however, is not validated to ensure it is conceptually complete. This may well be a limitation, as the findings of this survey constituted an essential part of the research, from which the subsequent theoretical concepts were developed. This limitation is unlikely to be significant, however, as the MDS results did conform with Schwartz(1992) structure, thereby indicating the inherent robustness and reliability of the data and approach.

## 6. CONCLUSIONS

There is an emerging view that sustainability is driven by and resembles a set of values. Given that personal values are relatively stable standards in one's life, they can therefore serve as important determinants and predictors of perceptions, attitudes and behaviors around sustainability, both at personal and organizational levels.

This research has taken an important step in exploring the potential relationship and significance of personal values, as the unit of analysis, with sustainability in a TMO project environment. Indeed, this is the first example of the use of Schwartz values theory and instruments in a TMO setting, so it sets a precedent for further studies within TMO settings and other, similarly complex, organizational or behavioral domains.

Six concepts (each expressed by a proposition) were identified: 'Feeling of Oneness', 'Moral Obligation', 'Creativity', 'Challenge', 'Change' and 'Compliance'. These concepts are offered within the paper as proposed explanations for how values both predict and can be shaped to influence, sustainability performance within construction projects. They also provide a practical and structured means to better understand the underlying factors that contribute to, and impact upon, sustainability performance, both at personal and organizational levels. Additionally they provide an alternative perspective to address and overcome sustainability-related challenges by emphasizing the underlying role of individual project actors (via values attitudes and behaviors) as catalysts or change agents for sustainability.

The study has also demonstrated the relevance and applicability of Schwartz(1992) theory and his value survey (albeit using the Mills et al.(2009) version) in accurately and systematically measuring and analyzing the personal values of project actors in a TMO project environment. This is both novel and important, as the survey instrument can now be deployed legitimately in other TMO projects to help project teams not only obtain specific understanding and awareness of the value priorities and their diversity, but also demonstrate the strength and degree of alignment (or disparity) of the values within projects, at any given time, throughout the project life lifecycle.

In a construction project, measuring and analyzing the collective values of those involved offers a potential means to make more informed decisions, and to better harness individual and collective concerns around sustainability, for example by configuring teams around certain value orientations, based on specific needs (Van Marrewijk 2007). This is particularly helpful in the construction setting due to the multi-phase and multi-organization nature of projects, and hence this study provides a novel, theoretical departure point from the work of Dubois and Gadde(2002) and others.

This research provides further evidence that certain value dispositions have potential to overcome (organizational and other) challenges in operationalizing sustainability, and so have merit beyond the TMO construction project setting within which the study was undertaken.

### Conflicts of Interest:

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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