Motivation for Coordination

A Complementary Approach to Enterprise Architecture Management Research

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***Abstract*—Enterprise architecture management (EAM) is a prominent discipline that aims at guiding decisions in local information systems (IS) investments toward organization-wide objectives. Due to shortcomings resulting from the guidance of EAM as a strong hierarchical, top-down driven coordination practice, scholars have recently introduced the concept of architectural thinking. Complementary to top-down driven coordination, architectural thinking aims at local decision-makers for applying collectivistic considerations in their decisions and hence guiding IS endeavors beyond local utilities. Yet, the question of how to enable and foster this collectivistic orientation remains unanswered. Inspired by stewardship theory, this research conceptualizes a collectivistic-oriented decision-maker by the means of motivation. A literature review is conducted for identifying and exploring pertinent motivation mechanisms that foster the adoption of a collectivistic orientation among decision-makers, enriched with focus group data. To this end, five groups of situational and psychological mechanisms are reported. These findings set out a guidance for prospective EAM research in approaching architectural coordination through a collectivistic orientation in decision-making.**

***Keywords*—enterprise architecture management; coordination; motivation; decision-making; stewardship theory**

I. INTRODUCTION

As investments in corporate information systems (IS) have grown ever since, virtually all of today's organizations face progressive challenges in coordinating allocated technical resources and labor forces toward organization-wide aligned, consolidated, and manageable IS solutions [1]. Local business (e.g., business unit) requirements, for changing or developing IS, affect multiple facets of an organization, and moreover involve a large number of stakeholders with heterogeneous concerns [2]. In order to achieve beneficial IS solutions on the organization-wide level, projects must reach out beyond local considerations. While dealing with a significant inertia of structural, processual and technological complexities, one major constraint in achieving organization-wide considerations has been the local decision-maker: decisions that follow local demands or goals with disregards to collectivistic purposes represent a potential conflict for organization-wide benefits, and therefore require some form of coordination [2].

For several years, the enterprise architecture (EA) has been researched and applied as effective organizing logic for business process and the information technology (IT) infrastructure [3]. EA management (EAM) goes beyond the descriptive logic of EA, enforcing a holistic guidance on local IS investments for maintaining and developing the EA [4]. Despite its prominence in research, today's organizations still struggle with the successful establishment of EA [3]. This mainly results from the dominant approach to EAM as a centralized, hierarchical practice for coordinating local decision-makers toward organization-wide, collectivistic objectives [5]. More prevalently, EAM's shortcomings result from the restriction of local design decision freedom on the IT side, and from its too IT-related focus to involve "that other 90%" of affected decision-makers on the business side [3, 6]. In long-term consequence, decisions in IS endeavors have remained beneficial to local rather than collectivistic levels [7].

More recently, a new concept has been introduced to EAM research, which proposes an alternative means-ends approach to hierarchical, governance-based forms of architectural coordination: *architectural thinking* [8]. Architectural thinking aims at local decision-makers for applying collectivistic considerations and organization-wide thinking, hence guiding their decisions in line with organization-wide intentions [8, 9]. In order to approach this concept as a bottom-up, non-governed form of EAM practice, future research will be required on exploring mechanisms (defined as causes and means) that enable and foster architectural coordination through a collectivistic orientation in decision-making.

The paper at hand aims at contributing to future research on architectural coordination by deriving a new perspective on the phenomenon of interest: while prior research has theoretically built on a coordinated model of man in decision-making, this research opts for a distinctive conceptualization on a collectivistic orientation in decision-making, and for shedding light on pertinent mechanisms that enable and foster this orientation. Stewardship theory, a complementary approach to hierarchical governance, deploys the model of a collectivistic-oriented decision-maker [10]. Parallel, stewardship theory emphasizes mechanisms that reconcile with motivation, fostering this collectivistic orientation, and that further set out a guidance for EAM research in approaching architectural coordination complementarily.

This research is structured as follows: first, the collectivistic orientation in decision-making is derived from theory,

conceptualized, and next explored in EAM research. Second, stewardship theory is applied as research lens to conduct a literature review for identifying and exploring motivation mechanisms that foster the favored collectivistic orientation. Owing to the shortcomings of EAM practice, focus group data are collected and examined in order to enrich the qualitative findings. The explored mechanisms set out a guidance for EAM research toward a collectivistic orientation in decision-making; theoretical substantiations are implied.

II. Toward a Collectivistic Orientation in Decision-Making

A. Theoretical Conceptualization

Coordination is a key activity wherever tasks have to be solved by the division of labor [11]. Over the past century of economic research, one of the most prevalent assumptions made on decision-makers, who perform labor-divided tasks, is that of an economic actor, seeking to maximize his/her own benefits [12]. At the core of contributions to organization theory has been a lens that portrays this prior economic research and human assumptions, promoting coordination as a means between a decision-maker and his/her principal in a labor-divided relation (Table I): agency theory.

The coordinated decision-maker. Following agency theory [12], the decision-maker in labor-divided tasks is assumed to maintain information beyond the knowledge base of the principal (i.e., asymmetry), and to behave self-interested with individual goals and preferences [13]. These assumptions become a factual conflict as the principal needs to (re-)consider residual economic losses in achieving organizational goals, imposed and upheld by the decision-maker's individualistic behavior, and the asymmetry of information. As a result, some form of coordination is required, aimed at controlling the decision-maker. Ross [14], Jensen and Meckling [12] as well as Eisenhardt [15], among others, generalize the transferability of this coordination purpose to any form of labor division, in which at least one of the involved parties is assumed to increase his/her benefits against the respective goals of others.

The characteristics of coordination assume an environment, where a decision-maker can be controlled by the means of information. Though, coordination is not without any downside. Jensen and Meckling [12] state the central discourse of agency theory in mitigating a trade-off between the benefits of achieving the principal's goals on the one side, and the economic cost of controlling these achievements on the other side. Eisenhardt [16] illustrates this trade-off exemplary: first, investments in information can be undertaken to verify and coordinate the factual actions of the decision-maker, though causing cost of control. Second, relying on outcomes rather than processes of the decision-maker's work can be rewarded by the reach of outcomes, though risking opportunity cost if the decision-maker is wrongly rewarded. To this end, coordination by the means of information has remained controversially discussed [e.g., 10, 15].

The collectivistic-oriented decision-maker. Beyond agency theory's unit of analysis, stewardship theory (Table I) offers a distinctive perspective on coordination, contrary to individualistic human assumptions in labor-divided settings [10]. It deploys the model of a decision-maker who is "not motivated by individual goals", but rather behaves as steward, focused toward "pro-organizational behavior" and the goals of the collective [10]. Cost of coordination become obsolete as diverging goals of the decision-maker no longer exist [17]. Given the model of a rational rather than economic man, who emphasizes "higher value on cooperation than defection", stewardship theory focuses the coordination of decision-makers through behavioral means, and introduces motivation mechanisms for enabling and fostering this behavior [10].

Compared to agency theory's roots in economic research, stewardship theory has originated from sociology and psychology [17]. Rather than controlling behavior, the decision-maker's reward for collectivistic behavior is to attain the goals of the organization [10]. Contrary to agency theory, behavior (not information) becomes the means of coordination. In the vein of sociological and psychological origins, mechanisms enhancing and fostering the aimed orientation reconcile with characteristics of motivation, which stewardship theory reveals as causes and means that guide behavior toward collectivistic ends. In stewardship theory, motivation is differentiated by psychological (e.g., intrinsic causes) and situational mechanisms (e.g., work-environmental factors) [10].

Although both theories conceptualize a virtually different model of man (Table I), there is no substitution of stewardship on agency theory [10]. Stewardship's model of man is a complementary approach to the traditional theorization of a coordinated decision-maker; it does not elude traditional coordination means, but coincides with behavioral aspects to it [10]. By this conclusion, decision-making will be examined in EAM, specifically where stewardship's conceptualization becomes pertinent to architectural coordination.

TABLE I. Theoretical Conceptualization

Conceptualization	Agency Theory	Stewardship Theory
Model of man	Coordinated (economic decision-maker)	Motivated (non-economic decision-maker)
Coordination assumption	Information as coordination means; separation and specialization of work	Behavior as coordination means; cooperation higher valued than defection
Human assumption	Self-serving, individualistic behavior	Pro-organizational behavior, collectivism
Organizational assumption	Partial goal conflict among actors; economic criteria; information asymmetry	Aligned goals among actors; non-economic criteria
Mechanisms	Control of trade-off between benefits and economic cost associated with information asymmetry	Psychological and situational mechanisms that foster motivation

B. Decision-Making in EAM

To achieve the expected performance effects from the EA, such as organization-wide consistent and aligned IS solutions, the distinguishing ambition of EAM is characterized by its holistic perspective: EAM considers the organization in its entirety, reaching out in horizontal (all artifacts per artifact type), vertical (all layers of the business-to-IT stack) and time (e.g., organizational development over several points in time) dimensions [4, 18]. In EAM, the holistic guidance of local IS decision-makers is governed from a centralized position in the organization, enforcing organization-wide perspectives in decision-making across dispersed organizational units as well as various depending and interrelated business processes [19]. As such, the holistic perspective of EAM has become particularly decisive to local levels, as decisions on even small local IS changes affect a potentially large number of business processes, workflows, and stakeholders with heterogeneous requirements [7].

The coordinated decision-maker. The model of man in decision-making is related to the work-environment that EAM research portrays as an organization in complexity, interdependencies, and size. An environment, where decisions are necessarily made in the context of labor division and specialization, and where these decisions potentially affect multiple facets of an organization (e.g., business processes, technical resources, stakeholders) [2]. In the organization, architectural guidance is enforced and excelled by enterprise architects [3]. Following the generalizations by Ross [14], Jensen and Meckling [12] as well as Eisenhardt [15], enterprise architects become principals in the meaning that they coordinate local decision-makers (e.g., IT specialists or business owners) on behalf of the EA. The conflict potential roots in human assumptions parallel to agency theory [12]: goals, needs, and perspectives of local decision-makers are often not coincide to their principals, who are in charge of governing organization-wide objectives [3, 20]. As local solutions follow local demands, they risk reluctance to organization-wide goals, which threatens the realization of local benefits at the expense of organization-wide benefits.

Similarly implied by agency theory [12], information imposes a coordination means that is aimed at aligning and controlling local decision-makers toward organization-wide objectives. In EAM, information asymmetry occurs primarily in two major directions: top-down, organization-wide goals are not always made aware and being followed by all local decision-maker levels of the organization [8, 9]. Bottom-up, local specific capabilities are often limitedly reproducible (sometimes even limitedly understandable) by enterprise architects [20]. The bulk of investments in information for harmonizing these asymmetries, thereby guiding local decision-makers, results in economic cost or efficiency shortcomings, similar suggested by the economic discourses of agency theory [e.g., 12, 14]. In EAM efforts, information means are applied in the form of highly sophisticated artifacts like meta-models, professional plans or tools [3, 8], and mainly executed in a top-down driven direction [6, 21].

At the crossroads in EAM. Despite the importance of information as a coordination means, the factual shortcomings of EAM approaches have developed out of its strong centralized, hierarchical coordination practice. More specifically, architectural coordination has developed highly IT-focused, having incorporated rather IT- than business-affected decision-makers [e.g., see 3]. On the IT side, a frequent shortcoming of architectural coordination is the restriction of design freedom of IT-affected decision-makers. Furthermore, this IT-related focus has fallen short to become a meaning for "that other 90%" of the organization that is not related to IT [3, 6]. Not least for this reason, architectural coordination has gradually faced an image problem among guided decision-makers over the past years. Once people talk about architectural concerns, "eyes start to roll" [21]. In long-term consequence, IS solutions have remained often local/ short-term than organization-wide/long-term beneficial [7].

Toward a collectivistic-oriented decision-maker. Due to the shortcomings of traditional architectural coordination, EAM scholars have recently introduced an alternative means-ends approach by promoting "architectural thinking throughout the enterprise" for achieving organization-wide objectives in local decision-making [9]. Aiming at local decision-makers, especially those not related to IT, to follow collectivistic considerations and organization-wide thinking, architectural coordination was complementarily approached from a bottom-up, local decision-maker's perspective [8]. Similar to stewardship theory [10], architectural thinking favors its success potential for coordination in behavioral means. According to Winter [8] as well as Aier et al. [3], architectural thinking targets the state of mind of local decision-makers, who are aimed at applying collectivistic considerations in their decisions and hence guide IS investments beyond local utilities. Following the concept of architectural thinking, there is no reconsideration of the traditional, coordinated model of man, but rather is the practice of architectural coordination, that aims for a complementation by a collectivistic orientation in decision-making.

To conclude, the holistic approach of architectural guidance remains not solely a question of coordination. However, a holistic guidance can be catered complementarily by a collectivistic orientation among incorporated decision-makers [8, 9]. To this end, stewardship theory can be justified by conceptualizing a model of man that does not elude traditional means of coordination, but complementarily emphasizes a collectivistic orientation in decision-making, following up recent aims of EAM research. In order to identify how to approach architectural coordination as a collectivistic orientation in decision-making, the next step sets out a literature review and collection of focus group data on motivation mechanisms that foster this orientation.

III. Methodology

A. Literature Review

Fostering stewardship's promoted orientation in decision-making, "motivation" is bound to a wide range of causes and means [10]. For an identification of the phenomenon of interest, motivation mechanisms are scoped at the outset.

In stewardship theory [10], motivation is defined by psychological and situational mechanisms: psychological mechanisms craft a collectivistic orientation through an individuals' state of mind, for instance by *intrinsic causes* (motivation by the achievement of higher order needs), *identification* (motivation by the feeling of belonging), and *use of power* (motivation by recognition and status). Situational mechanisms draw on work-environmental factors that foster collectivistic behavior, such as the *philosophy of management* (motivation by involvement orientation), *culture* (motivation by the style of working), and the means of *power distance* (motivation by distributed leadership). Owing to this broad scope of motivation and the expected large number of articles in research dealing with particular mechanisms, the search was aimed at a broad coverage of the phenomenon of interest.

In order to identify motivation mechanisms, high-ranked peer-reviewed publications from the *AIS Senior Scholars' Basket of Journals* were used (*European Journal of Information Systems, Information Systems Journal, Information Systems Research, Journal of the Association for Information Systems, Journal of Information Technology, Journal of Management Information Systems, Journal of Strategic Information Systems, MIS Quarterly*). In the first step, the term "motivation*" was applied as search-title in the EBSCOhost (EBSCO) and Web of Science (WoS) databases (39 hits in total). Due to the broadness of the topic, the search was refined by excluding those articles, which were either (a) exposed to a content other than motivation, or (b) misleading in terms of stewardship's definition of psychological and situational mechanisms. Articles were sequentially excluded by reading (a) titles, abstracts and keywords (26 exclusions) as well as (b) the rest of the text's body (10 additional exclusions). In addition to the term-specific search, a backward search was added (22 inclusions) [22] to probe for further mechanisms in the cited references of the articles at hand. In total, 25 articles served for an identification and further exploration of motivation mechanisms.

All 25 articles, although not studying the context of architectural coordination, had a characteristic focus on individuals working toward collectivistic ends and/or the achievement of higher order needs, and therefore implied an analogue approach to the conceptualized model of man underlying this research. More prominently, the found articles focused the topics open source software development and programming. As suggested by Webster and Watson, findings were classified [22]. Following stewardship theory, the definitions of psychological and situational mechanisms were used for classifying the gathered motivation mechanisms.

B. Focus Group

Mechanisms that enable and support a collectivistic orientation among decision-makers have been explored in a two hours focus group session that took place in November 2015 in Zurich, Switzerland. Focus group was used as a valuable method for capturing data from communication and interaction [23, 24] of experienced practitioners. Due to the fact that architectural coordination was often discussed to fall short in practice, these focus group data were used to enrich the qualitative literature review findings from a practical perspective. The session was hosted within an established practitioner community, having present ten senior IS experts in enterprise architecture, IS project management and IS strategy from five large banking institutes, headquartered in Switzerland, Germany and Austria. Banking institutes provided a valuable background, in which primarily size and complexity of an organization affect the guidance of local decisions toward organization-wide ends. Due to regulatory changes in the banking industry, the consideration of organization-wide ends in decision-making has been particularly reinforced over the past years, having challenged organizations not only on their local business, but also their IT side.

Two slots were conducted, both briefly introduced by the moderator. In the first slot, coordination was discussed as a means for achieving organization-wide ends. Guided by the moderator, the second slot was focused at deeper exploring those brought up mechanisms that referenced the scope of motivation (following stewardship's definition of psychological and situational mechanisms), and discussing their characteristics.

IV. Results

Using stewardship theory, findings were classified into five groups of motivation mechanisms, defined here and concretely explored in the following subsections (Table II).

The first group was *identification*, summarized by psychological mechanisms gratifying an individual with a sense of belonging to the collective. Similarly described by stewardship theory, identification maintains and strengthens an individual's feeling of belonging to the organization [10]. *Management philosophy*, the second group, continued social identification from a work-environmental (rather than psychological) perspective. Mechanisms were characterized as supporting an individual's commitment toward his/her environment [10]. The third group was *monetary mechanisms*, incentivizing collectivistic behavior through financial means. Although stewardship theory did not explicitly promote financial means as motivation mechanism, support was found in the theory's generic discussion on extrinsic reward mechanisms, which appeared justifiable to include monetary mechanisms for further explorations. Alike, the fourth group, *use of power*, focused the motivation of behavior through rewards, which were promoted by stewardship theory along the self-actualization of the decision-maker [10]. Furthermore, working toward the achievement of collectivistic benefits can be a reward itself. Counting toward this cause-effect relation was the fifth group of the reviewed literature, *intrinsic causes*. A parallel was drawn by stewardship theory, shedding light on intrinsic motivation caused by "higher order needs" that are served by individuals [10].

A. Mechanisms in Literature

Identification. Research has discoursed organizational identification [e.g., 25] as motivation mechanism, creating a "sense of belonging" [26]. A collectivistic orientation is likewise fostered by an identification with established goals [27]. Motivation is further found as a result of socialization, a

process that obligates an individual with the work-environment [28, 29]. Socialization is largely determined by cultural forces, such as norms, principles, and values, on the basis of which pursued activities become collectivistic-oriented [30]. Deci and Ryan [31] describe enjoyment of the work-environment as a cause for collectivistic behavior [29]. Related to enjoyment [28] are inspiration [32], acceptance [33], and the degree of creativity of the work-environment, which cause individuals' motivation for a collectivistic orientation [34]. However, identification always depends on a subjective perception of the environment as well as the contributions made by collectivists to their surrounding environment. For example, instrumentality (perceived own contribution to the collective), self-efficacy (perceived capability of showing required actions for given tasks) [35], and valence (subjective evaluation of goal dependencies) [35] underline this dependency of identification.

Management philosophy. Management philosophy builds on support mechanisms that relate an individual's commitment toward his/her work-environment, and thereby strengthening a collectivistic orientation: for instance, Hertel et al. [35] review trust and reliability as work-environmental factors that enable and support a collectivistic orientation. Such mechanisms craft a "psychological contract" between the individual and his/her work-environment, and further acts as motivation for further participation/commitment toward collectivistic ends [36]. In this vein, credibility of the organization was found as commitment support factor [26, 37]. Kinship, often reviewed as "gift culture" [38, 39], was also favored as motivation cause [29], a mechanism that enables collectivistic behavior, and simultaneously not expects a return on this behavior (contrary to the often discussed "reciprocity-based culture") [see 26].

Monetary mechanisms. Monetary mechanisms received no explicit support from stewardship theory; evidence came from the reviewed literature. Some references compared financial rewards with a form of control [40, 41], different to the conceptualized, non-economic model of man underlying this research. Contrary, other references heavily promoted financial means, some even considering a substituting ("crowding-out") effect of economic on non-economic means [e.g., 36, 42]: on the one side, literature outlined an indirect lens on economic means, i.e., low opportunity costs [43]. On the other side, literature discoursed the argument of direct financial benefits, rewards that foster the motivation for collectivistic behavior and that enhance the performance of the contributing individual [35, 44].

Use of power. In the group use of power, status-, career- and reputation-related aspects were discovered. As underlined by stewardship theory, this group of mechanisms focused the self-actualization of an individual [10]: more prominently, the professional status and recognition of an individual play an important role in fostering a collectivistic orientation [45]. The higher the expected recognition of an individual is, the greater the expectable contribution toward collectivistic objectives [27]. Mechanisms driving an individual's self-actualization followed examples of career advancements [28], experience gains [29, 46], and reputation-building [36, 47].

Intrinsic causes. Intrinsic causes explore the achievement of collective, including individual, benefits as motivation for a collectivistic orientation. Paradox, but although vast characteristics illustrate motivation as a means for achieving collectivistic benefits [e.g., 34, 48], evidence was gathered that working toward the achievement of collectivistic benefits comes back to a motivation mechanism in itself. Examples include organizational learning [47, 49], skill training [28], and knowledge creation [26].

B. Mechanisms in Practice

The focus group session was briefly introduced by the moderator. In order to found a basis for mutual understanding on mechanisms applicable for architectural coordination, the participants of the session were asked to characterize purposes of their daily coordination practices in the meaning of achieving collectivistic rather than local benefits. As result, coordination was discussed as organization-wide means for balancing three areas of conflict: global versus local optimization projects, sustainable/long-term investments (i.e., consistent architecture) versus short-term problem solving, and organization-wide goals/strategy versus individual/personal goals/interests. It was acknowledged that any form of mechanism applied for these coordination purposes highly depends on the cultural and work-environmental background of the respective organization as well as the mindset, sensations, and perceptions of its affected decision-makers.

Having discussed mechanisms of coordination, it was next probed by the moderator for additional information on those mechanisms that appeared highly referencing the scope of motivation (following the definition of stewardship theory). Consistent with the literature review, brought up causes and means were deeper discoursed, and finally classified to psychological as well as situational characteristics. In all, the mechanisms *identification*, *management philosophy*, *monetary mechanisms*, and *use of power* found evidence in focus group data. Culture was discussed in parallel as determining force on all other motivation mechanism. Notwithstanding their promotion by the reviewed literature, *intrinsic causes* found no explicit support from focus group data.

TABLE II. RESULTS

Motivation Mechanisms	Literature Review	Focus Group
Identification	Culture (norms, principles, values), enjoyment, inspiration, degree of creativity, acceptance	Culture, mindsets, personal ambitions
Management philosophy	Trust, reliability, credibility, kinship	Security of job and workplace, co-management, autonomy
Monetary mechanisms	Direct financial rewards, opportunity cost	Salary, bonus payments, career benefits
Use of power	Status, reputation, recognition, career and experience gains	Climate (discussions, participation in decision-making)
Intrinsic causes	Higher order needs (learning, training, knowledge)	---

Throughout the workshop discussions, participants laid emphasis on mechanisms that tie decision-makers with their work-environment. Among the mentioned mechanisms (Table II) was the *identification* with the social environment of the organization (e.g., culture, mindsets, personal ambitions). Furthermore, participants named situational mechanisms, such as the security of a decision-maker's job and work place, as well as the degree of co-management (*management philosophy*). Also affiliated to management philosophy was autonomy, explored as motivation mechanism for cooperative work-environments and collectivistic considerations in decision-making.

Finally, *monetary mechanisms* and the *use of power* found support from focus group data. Along monetary mechanisms, salary, bonus payments, and career benefits were named, rewarded, for instance, for project achievements that reach beyond a single or local solution. On the use of power, arguments were brought up that described organizational climate as enabling variable, i.e., conditions under which discussions and the participation in decision-making take place.

V. Implications

Based on the explored groups of motivation, implications are raised on which ends the identified mechanisms may find theoretical substantiation for continuing architectural coordination complimentarily.

Identification. Identification was found largely determined by cultural forces. Prior EAM research has addressed the role of culture for impacting EAM's effectiveness [50]. Likewise, stewardship theory promotes culture as a core motivation mechanism [10]. Thus, future research may find support by an organizational culture theory lens for investigating organizations that process culture as a form of collectivistic alignment of their decision-makers [51]. Drawing on organizational culture theory, cultural artifacts may be used as lens for examining decision-makers' orientation toward the collective, including for instance an organization's espoused value or belief system [50, 51]. Further relevant in the context of identification may be the decision-makers' perception of the work-environment as well as the perceived contributions to it. To this argument, organizational culture receives supported as a lens by stewardship theory, as any form of perception is manifested to underlying assumptions (i.e., perception, feelings) [51] that may guide the integration of individuals toward collectivistic ends [10].

Management philosophy. Mechanisms of management philosophy continue identification from a work-environmental perspective. Shedding light on collectivistic considerations from an institutionalization perspective, EAM research [19] has explored organizations as "a social order or pattern that has attained a certain state or property" [52]. Work-environments, particularly in terms of management philosophy, become institutionalized as social constructions with "a rule-like states of thoughts and actions" [53]. It may become relevant for future research to consider institutional theory as research lens in order to examine how local decision-makers' orientation is fostered by their institutionalized environment on the one side, and how their behavior becomes reproduced in the organizational environment on the other side [54]. First dedications have been made on using institutional theory as lens for investigating architectural coordination [19], using similar mechanisms as considered by stewardship theory [10] and the literature review [35], i.e., trust, reliability, social legitimacy or grounded values.

Monetary mechanisms and *use of power*. Following monetary mechanisms, collectivistic considerations can be fostered by financial means [26, 35], which contradicts the conceptualized model of a non-economic man. It was further noticed in the review of literature that economic mechanisms can have a substituting effect on non-economic mechanisms [42], which questions their applicability in complementary ways. Regarding future EAM research in the vein of the proposed non-economic model of man, monetary mechanisms may hardly be continued. Other than that, the use of power justifies its existence by supporting the self-actualization of a decision-maker [10]. Therefore, the use of power, for instance reputation- or status-related, may find a proper substantiation in future research, considering the lens of stewardship theory.

Intrinsic causes. Working toward higher order needs was discovered as a motivation mechanism in itself. This finding is thoroughly supported by stewardship theory in psychological mechanisms on the conceptualized model of man. Specifically, the theory states on intrinsic motivation that by working toward organizational, collectivistic ends, "personal needs are met" [10]. Following this support, stewardship theory may substantiate future research lenses in approaching a collectivistic orientation in decision-making, complementary to traditional EAM approaches. Underlining this implication, the paper at hand exemplarily serves as an approach for guiding future research.

VI. Conclusion

This research reports five groups of motivation mechanisms that set out a guidance for approaching architectural coordination through a collectivistic orientation in decision-making. These findings, not least due to their enrichment with focus group data, go beyond abstract conceptualizations, and substantiate the progress of complementary concepts in prospective EAM research.

However, this research has some limitations. First, stewardship's model of man is a complementary approach to the traditional, coordinated decision-maker. The impact of motivation mechanisms is therefore highly dependent on the shortcomings of traditional forms of architectural coordination, and limits a general applicability of motivation mechanisms in practice. Second, owing to the chosen search strategy, other substantially relevant literature work in the context of motivation might have been neglected, limiting further insights for instance into the coherence and reciprocity of motivation mechanisms on the one side, and their applicability to governance-based forms of coordination on the other side.

Future research, in approaching architectural thinking as an alternative means-ends approach to traditional forms of EAM-guided decision-making, may build on this research's substantiations: the implied theoretical lenses (e.g., institutional theory) may be used for shedding light on factors that

determine the evolvement of non-governed forms of architectural guidance. Also, insights into action and behavior of decision-makers are supported, and how these become reflected and eventually reproduced over time (e.g., institutional theory, organizational culture theory). Finally, the interplay between organizational and decision-maker perspectives is supported, regarding stewardship theory's highlighted pertinence as research lens.

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