DOI NUMBER· 10.19255/JMPM01610

KEYWORDS
IT project manager • team role • sense of coherence • public service • Belbin • Antonovsky

IT Project Managers'

TEAM ROLE AND SENSE OF COHERENCE

A pilot study in Sweden

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• ABSTRACT •

The project manager's team role and sense of coherence can significantly influence the project role. A pilot study was conducted by a web survey; 35 IT project managers from Swedish public authorities participated. Questionaries' from Belbin's and Antonovsky's books was used for the web survey. Research findings showed that Belbin's team role shaper was the strongest and implementer was the second strongest. Twelve of the respondents had a strong sense of coherence, 21 had normal, and two had weak.

1.INTRODUCTION

The IT project manager's role is to deliver the information system and / or the technical solutions that the project sponsor has ordered. The project manager needs assistance from the team, i.e. the project coworkers, in order to be able to deliver what the sponsor expects and requires. That is to say, that the coworkers must be led in a way that achieves project success, and that is one of the IT project manager's most important tasks. To hold such a leadership quality requires that the project manager's personal qualities are the right ones, and should also be put in relation to the actual coworkers. Personal qualities are for example connected to one's team role and life situation. IT project managers' team roles, and their sense of coherence, can possibly influence their positions and also their work. So, if the project manager has the right team role and the right view on life, the project manager's work will be better accomplished, and the project will become a success! Could that really be true? A pilot study among IT project managers, in Swedish public authorities, can provide some answers; or at least the findings could point out the direction of possible answers to the rather complex phenomena behind this research.

To begin with, there are three basic types of behavior in a functioning organization (e.g. in IT projects); (i) "people must be included to enter and remain within the system", (ii) "they must carry out their role assignments in a depending fashion", and (iii) "there must be innovative and spontaneous activity in achieving organizational objectives, which go beyond the role specification" (Katz, 1964, p. 132). The latter is especially important for a project manager, who needs to handle situations that occur in a project, and that need to be managed outside of the ordinary business / organization structures.

Qualification requirements showed that Swedish employers appreciated project management experience as the most important qualification with 80.3 percent (261 of 325 ads.), secondly was an academic degree with 66.8 percent (217), and thirdly was language skills (Swedish and/or English) with 54.2 percent (176). These three qualifications can be seen as demands on core competence (Marcusson & Lundqvist, 2015).

--- 1.1 Project manager's role and work tasks ---

According to PMBOK (PMI, 2013), a project manager's role entails responsibility for using specific knowledge, tools, and methods according to best practices. Furthermore, there is a need for subject-specific knowledge and leadership experiences. "The project manager is responsible and accountable for setting realistic and achievable boundaries for the project and to accomplish the project within the approved baselines" (PMI, 2013, p. 35). The project manager acts with assistance from the project groups and other stakeholders. Efficient project management requires knowledge, accomplishment, and personal characteristics. Project management provides the project manager with a model, structure, processes, and tools. The role of a project manager is complex and conveys high demands on the individual. IT project managers' (Marcusson & Lundqvist, 2015) work tasks, according to Swedish employers, are to lead, drive, coordinate, and to have responsibility, mentioned in 60 percent of the advertisements that were studied (195 of 325 ads), plan in 26.5 percent (86), follow up and report in 21.2 percent (71), and co-operate was mentioned in 11.9 percent (42) of the advertisements. The leaders' attitudes and personalities are considered to be influential and important (Luker et al., 2016).

--- 1.2 Success ---

Success is created by series of investments over time, and does not happen in a single, momentary event (Mineo, 2014). IT project success can appear in three practices; (i) "an agreed definition of success", (ii) "consistent measurement", and (iii) "the use of result" (Thomas & Fernández, 2008, p. 740), which implies that knowing what and how to measure could both facilitate, and enable the finding of IT project success. There are seven tools for project success (Harding, 2014); (i) project scope document, (ii) project budget, (iii) project schedule, (iv) organization chart, (v) action-item list, (vi) project execution plan, and (vii) risk register. Using appropriate, suitable methods with valuable advantages is one way to create success in IT projects, example of such methods are; (i) critical success chains (CSC), (ii) analytic hierarchy process (AHP), and (iii) fuzzy cognitive maps (FCM) (Rodriguez-Repiso et al., 2007).

Success factors play a critical role. Even though causes behind project success (or failure) are largely subjective (Montequin et al., 2016), it is critical to understand the success factors because of the business' investments that are made when these projects are carried out (Abu-Shanab & Bataineh, 2016). The project success criteria are grouped according to process and outcome (Jonkers et al., 2015). Bolat et al. (2017) emphasize that IT projects need tools for effective project management. To this must be added requirement changes, in order to fulfill customers' / end users' needs throughout the projects, and further how these procedures will affect the performance (Sökmen & Cebi, 2017). One point of success can be team interactions (Pons & Haefele, 2016), and how the team can be involved in the planning of the work (Dominiguez et al., 2016). Hence, the need of creating a functional reward system (ibid). Another point of success can be associated with the project manager, who contributes to success (González et al., 2016).

The use of person-organization fit theory creates "a better fit between project managers and the projects", which leads to project success (Dvir et al., 2006, p. 46). Transformational leadership with help from team building is another way to achieve project success (Aga et al., 2016). A highly important aspect for project success is the project management attitude, not least because of its view on personal characteristics (Blaskovics, 2016). Single project successes are affected by the project organization (Lechler & Dvir, 2010). One way to project success goes through effective people management (Scott-Young & Samson, 2007). Success factors in a project are processes which involves people (Cooke-Davies, 2002), and project management has a correlation to project success (Mir & Pinnington, 2014). Obviously there are several aspects on how project success could be achieved by acknowledging both individuals and the organizations properly.

The role of project manager contributes to the project success, and his/her personality can be a predictor (Bedingfield & Thal, 2008). There is a significant indication for a relationship between the big five components (i.e. openness, neurotic, agreeableness, conscientious, and extra version) and leadership as regards project managers' personality exercising influence on project success (Wang, 2009). Project managers' success is predicted by her/his personality, especially as regards conscientious and openness (Thal & Bendingfield, 2010). According to Alias et al. (2014) project management actions, project procedures, human factors, external issues, and project related factors are the five variables for achieving project success.

--- 1.3 Research questions ---

This pilot study explores Swedish IT project managers in public authorities, the influences on them according to Belbin's team roles, and according to the sense of coherence. The research questions are:

1. Which of the Belbin team roles are the strongest among IT project managers in Swedish public authorities?
2. What values do IT project managers in Swedish public authorities reach as regards the sense of coherence theory?

2. METHOD

This research has been performed in a deductive manner. Partly based on the researcher's testing of team roles, sense of coherence, and applying of other personality tests in project management and leadership courses among students and professionals. The test results have been discussed in the actual classes, one part of the discussions has been about the relevance for managers and employees. The mentioned theories make up the basis for the data collection; the current pilot study is based on the actual course experiences and reflections, together with particularly chosen theories and other researchers' findings.

The method for the data collection was a web survey; the web system Survey and report was used. Initial questions about age, gender, and experience were asked (see below). Then, the questions concerning team roles and sense of coherence were asked.

The team role part of the survey was constructed with questions (Self-Perception Inventory) from Belbin's book Management teams (1993, Swedish edition), and consists of seven (I–VII) questions, each with eight alternative answers (A–H). To each question the respondent had ten points available that could be allocated optionally on the eight alternatives (A-H). The test that is described in the book (Belbin, 1993) has eight roles, later a ninth role (specialist) was added. However, in this pilot test, eight of nine roles were tested. The part of the survey that covers sense of coherence consists of 29 questions (Antonovsky, 2002, Swedish edition). These provide the values regarding the sense of coherence, i.e. comprehensibility, manageability, and meaningfulness. All questions must be answered by the respondent, the only ability to refrain from a question was to interrupt the questionnaire. No respondent did that, all of them fulfilled the questionnaire.

105 IT project managers were asked to take part in pilot test and 35 answered yes to participate. Non response analysis of the 70 that not did participate in the survey is presented in connection with the sample of respondents. They had some month earlier answered a big survey and had revealed that they have a stressful work situation. It is understandable that two thirds did not answer, and since this research was a pilot study, the volume of respondents that answered it is regarded as acceptable. There is no meaning to do statistical analysis (e.g. regression analysis) with so few respondents as 35.

Two respondents, one male and one female, were sorted out after they had completed the team role test, because they did not spread the ten points accordingly, instead they used all their points for one answer / alternative (A-H). Hence, 33 respondents took the Belbin survey. However, all 35 respondents answered the questions about sense of coherence in an accurate way. The respondents' year of birth were between 1958 and 1985. The 35 respondents consisted of 21 males and 14 females. The project managers' years of experience at the present employer are:

- 2 respondents had 0-3 years' experience
- 3 respondents had 4-6 years' experience
- 4 respondents had 7-10 years' experience
- 15 respondents had 11-20 years' experience
- 11 respondents had 21 years' experience or more

It is notably that 26 of 35 (74.3%) have more than ten years of experience as IT project manager. Their years of employment are:

- 12 respondents had 0-3 years' of present employment
- 10 respondents had 4-6 years' of present employment
- 4 respondents had 7-10 years' of present employment
- 7 respondents had 11-20 years' of present employment
- 2 respondents had 21 years' of present employment or more

It is notably that 24 of 35 (68.8%) have less than seven years at the present employer.

Since there are rather few respondents, the collected data will not be broken down according to age, gender, or experience time, and it will not be statistically analyzed.

Validity of the survey is high. The survey questions are the question that Belbin and Antonovsky has created and they uses of whom (e.g. researchers, consultants, and HR)

who's will test team role a sense of coherence. It means that the questions are tested since many years and that they measure what they are intend to measure. Reliability is also high for team role and sense of coherence. Those who study team roles and/or sense of coherence use the same questions; therefore the result is not depending on who asks the question.

3. THEORY

First Belbin's team roles are presented and then Antonovsky's sense of coherence.

--- 3.1 Belbin team roles ---

Belbin describes a team role as "a tendency to behave, contribute and interrelate with others in a particular way" and that "most people have two or three team roles that they are most comfortable with" (Belbin, 2017, Belbin-team-role). There are nine team roles (specialist is not tested in this survey).

- Completer Finisher (CF) polishes and scrutinizes the work.
- Co-ordinator (CO) focuses on the objectives and delegates work. CO is a candidate for being a chairman or in this case a project manager.
- Implementer (IMP) plans and carries out a workable strategy.
- Monitor Evaluator (ME) has a logical eye.
- Plant (PL) is creative, free-thinking, and solves problems.
- Resource Investigator (RI) finds ideas and brings them to the team.
- Shaper (SH) is driven, task-focused, and keeps moving. SH enjoys stimulating others.
- Specialist (SP) has in-depth knowledge.
- Teamworker (TW) identifies required work and completes it. TW functions as oil in the machinery.

These nine roles can be divided into three orientations (Seleem, 2016, slide 4); thought (PL, ME, and SP), people (CO, RI, and TW), and action (IMP, SH, and CF).

A project manager's behavior as a teamwork player, e.g. in a software project, influences the effort (Branco et al., 2015), and the team roles PL and IMP were discovered as important project manager roles. In a software engineering team (Omar et al., 2016) the SH is the leader and PL's are members. Among UK managers, the team roles of RI (33.5%), CO (26.5%), and TW (18.3%) are the top three (Fisher et al., 2000). Teams with one leader (SH) perform better then teams with none or with more than one leader (Henry & Stevens, 1999). The balance between team roles may influence the team's work and result (Luker et al., 2016). The strongest role for a business analyst was RI (40%), and for a developer it was CF (28%). The weakest role for a business analyst was ME (40%), and for a developer it turned out to be RI/CO (15%) (Vitó Ferreira & Langerman, 2014).

There is not much research about IT project managers and their Belbin team role. This gap in research can to some extend be reduced with this study.

--- 3.2 Sense of coherence ---

The model for salutogenesis contains health, stress, and coping (Antonovsky, 2002), and the sense of coherence describes the influence on an individual in a specific situation. Sense of coherence is a comprehensive attitude of pervasive and enduring sense of trust, and it has three components, of which the third is the most important one:

- Comprehensibility is the understanding (orderly, coherent, structured, and obvious) of events in a person's life, and the prediction of the future. The lower limit is 35 and people over this limit have a strong value.
- Manageability is the control a person have to take care of to manage things in life. The lower limit is 35 and individuals over this limit have a strong value.
- Meaningfulness is the belief of interest in, engaging in, and to get satisfaction from things in life that makes it worthwhile; can be seen as a motivation component of one's life. The lower limit is 30 and people over the limit has a strong value.
- When the sum of comprehensibility, manageability, and meaningfulness is over 160 it is a strong result, below 120 it is a weak result, and between these two is regarded as a normal result.

A person with strong sense of coherence will in a stressful situation:

- "Wish to, be motivated to, cope (meaningfulness);
- Believe that the challenge is understood (comprehensibility);
- Believe that resources to cope are available (manageability)" (Antonovsky, 1996, p. 15).

The three components in sense of coherence can give low or high value. Which means eight types of value combinations (table 1).

- Type 1 and 8 (in table 6) are stable and there is no problem to understand the meaning of them.
- Type 2 and 7 should be a rare combination because high manageability requires high comprehensibility.
- Type 3 and 6 are inherently unstable and lead to change.
- Type 4 shows a person with great courage and deep commitment in the search for understanding and resources.
- Type 5 requires the person to lose their understanding and to lose control of resources (Antonovsky, 2002).

The Nordic population has a mean value of 146.1, with a rate of 95–187, for the three components together (Antonovsky, 2002). The dimensions of social and psychological function are identified as functions that promote well-being at the workplace (Ruohomäki et al., 2015). Culture in an organization reflects the members' different values and social norms, which point in direction of a transactional dynamic organization (Graeser, 2011). "Transmitting the importance of values such as respect, commitment, and acceptance of the traditional culture or religion, conformity, safety, harmony, and concern for the welfare and interests of others could thus support adolescents' meaningfulness, comprehensibility, and manageability" (Barni & Danioni, 2016, p. 49). High levels as regards sense of coherence play a determining role for managers and their work situation (Cilliers, 2011). Managers with high sense of coherence are determinant when it comes to supporting (a positive) organizational climate (Feldt et al., 2004).

There is not much research about IT project managers and their sense of coherence. This gap in research can to some extend be reduced with this study.

Type	Component			Prediction
	Comprehensibility	Manageability	Meaningfulness	
1	High	High	High	Stable
2	Low	High	High	Unusual
3	High	Low	High	Upward pressure
4	Low	Low	High	Upward pressure
5	High	High	Low	Downward pressure
6	High	Low	Low	Downward pressure
7	Low	High	Low	Unusual
8	Low	Low	Low	Stable

TABLE 01. Dynamic connections in sense of coherence (Antonovsky, 2002, p. 43)

4. FINDINGS AND ANALYZING

First Belbin's team roles are presented and then Antonovsky's sense of coherence.

--- 4.1 Belbin team roles ---

The mean / median result from this survey with 33 respondents showed (table 2) that shaper (SH) was the Belbin team role with the highest value (Number and Sum % grayed in table 2). On second place, quite close, was the implementer (IMP). Last of the roles the plant (PL) was ranked. Each respondent's highest point is marked on level one, the second highest on level two, and the third highest on level three. The two, three roles on the highest levels, are the roles that an individual easiest can apply for the team work (gray in table 4). The number of respondents that were highest in the teams respectively role are summarized in table 4 as Number. The percentages are accounted for in table 2's last row (the roles Number are divided with the Sum Number e.g. IMP Number 22 divided with Sum Number 110 gives Sum% 19.8).

	IMP	CO	SH	PL	RI	ME	TW	CF	Sum
Mean	12.2	9.6	14.2	3.9	7.4	8.3	7.8	6.0	
Median	12	9	14	3	7	8	8	6	
Level 1	9	8	16	0	3	2	1	1	40
Level 2	10	1	7	0	2	4	3	2	29
Level 3	3	7	5	3	5	7	9	3	42
Number	22	16	28	3	10	13	13	6	111
Sum %	19.8	14.4	25.2	2.7	9.0	12.6	10.8	5.4	100.0

TABLE 02. Average and median points by team role and the three team roles with most points (N=33)

Some comments to Table 2. Sometimes respondents turned out to have two or more roles with the same value, and were in those cases marked against the higher level; consequently the next level was left empty.

- Level 1, the primary role, has seven respondents with two roles with the same value. 33 respondents of which seven has two roles (each gives plus one) gives 33+7=40.
- Level 2, the second role, have three respondents with two roles with the same value. 33-7 (level 1) = 26+3 (three with two roles) = 29.
- Level 3, the third role, have five respondents with two roles, two respondents with three roles, and one respondent with four roles with the same value. 33-3 (level 2) = 30+5 (five with two roles) + 4 (two with three roles) + 3 (one with four roles) = 42.

The Belbin role that appears most frequent, in this study, is shaper (SH) which is

characterized by being driven, focused, and to keep moving (Belbin, 1993, 2017). Omar et al. (2016) describe SH as a leader team role, which this study's data support.

The Belbin role that appears as the second most frequent is implementer (IMP), which is characterized by planning and carrying out strategies (Belbin, 1993, 2017). Branco et al. (2015) consider PL and IMP as possible project managers, IMP supports these findings since it was ranked as the second role; PL on the other hand, does not support it because PL had the lowest value.

The Belbin role that appears as the third most frequent is co-ordinator (CO), which focuses on the objective and delegates work. According to Belbin's theory (1993, 2017), CO should be the principal choice when talking about managers. Nevertheless, CO is clearly distanced by both SH and IMP in this study. SH and IMP, level 1 and level 2 in this study, show orientation of action according to Seleem (2016).

--- 4.2 Sense of coherence ---

The result from the survey (35 respondents) shows (table 3) rather high values, none is lower than the limits for comprehensibility, manageability, and meaningfulness. Strong / weak is based on the 35 answers' mean / median value.

	Mean	Median	Minimum	Maximum	Strong / weak
Comprehensibility	49.8	51	37	67	Strong
Manageability	54.3	58	44	63	Strong
Meaningfulness	47.0	47	31	56	Strong
Total	151.1	156	116	183	

TABLE 03. Result for sense of coherence parts (N=35)

Twelve respondents had a total sum (comprehensibility, manageability, and meaningfulness) over 160 (34.3%), and that is a strong result. Two respondents (5.7%) had below 120, which is a weak result. Between these two, it is a normal result, which 21 (60.0%) of the respondents had. The respondents as a group tend to lean towards the stronger part of the scale. The two that were weak were just below the limit (the lowest result was 116 and the limit is 120).

Mean value of the 35 respondents was 151.1 which can be compared with a Nordic population (Antonovsky, 2002) that had 146.1. That is to say, it was a slightly higher value than in Antonovsky's study. Variation range was 116–183 compared with 95–187 from Antonowsky's study. This means a smaller range, primarily with a higher minimum value. Twelve respondents (34.2%) had a strong sense of coherence, and only two were weak (5.7%). This is a result that points to a major preponderance of strong sense of coherence among these respondents.

5. CONCLUSION

The first research question was: Which of the Belbin team roles are the strongest among IT project managers in Swedish public authorities? The answer to the first research question was: In this pilot study they are primarily shapers (25.5%) and secondly implementers (20.0%).

The second research question was: What values do IT project managers in Swedish public authorities reach as regards the sense of coherence theory? The answer to the second research question was: In this pilot study the mean value of comprehensibility was 49.8, for manageability the mean value was 54.3, and for meaningfulness 47.0. No respondent was below the limits (35, 35, and 30) as regards these three components respectively. The total mean was 151.1, and there were twelve respondents (34.3%) that had a strong value.

To sum up, this pilot study focuses on 35 IT project managers in Swedish public authorities. A project manager, whose team role is shaper, and who has a strong sense of coherence is likely to influence project success positively. The research however is made with few respondents which conveys that the result not is statistically assured. Nevertheless, the result indicates only a weak trend which should be further explored in deepened studies.

The theoretical contribution is a start to fill the two gaps; (i) team role for IT project managers and (ii) sense of coherence importance for IT project managers.

Additionally, the practical contribution for e.g. project sponsors, program offices, educators, and business' is that team role and sense of coherence can have influence project success. And if so, then it can be important to investigate team role and/or sense of coherence when selecting IT project manager.

Further research would gain from being carried out in a larger group of IT project manager respondents. A comparative study between project managers in different fields would be preferable, to investigate if the IT project managers in any way are different than other project managers in general. At the same time, it would also be interesting to compare project managers with other managers to see if there are any differences as regards their sense of coherence and team roles. ◆

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