How to improve performance in technology and innovation teams?

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***Abstract*—This paper presents a study that attempts to answer practical questions about work team performance issues. It considers organizational culture, team climate and manager behavior as the major factors affecting competencies and performance of team members. Theoretical background and practical implications are discussed here.**

***Index Terms*—Competency, management, performance, team, organization, culture, climate, context, behavior, knowledge management, development.**

I. Introduction

Competencies in practical are some underlying personal characteristics (personality, knowledge, skills, etc.) manifested in typical behaviors that produce key business outcomes. Thus, they are causally related to individual performance and business results. Employees' competencies are affected by personal characteristics and social context as well. The social context at a workplace is created by corporate culture, climate in the team, values and beliefs shared by team members and manager, and management practices (behaviors).

The importance of competencies is supported by many authors in research and practice. Boyatzis [2], Spencer and Spencer [19] proposed causal relationships between competencies and job performance. Spencer [20] states that competencies able to distinguish "superior performance from average performance, or effective from ineffective performance, at a statistical level of significance".

The purpose of our study is to align these factors to enable key competencies that provide higher performance and business results.

II. Theoretical Background and Research Model

A. Competencies and their dependence on context

Competencies are considered as underlying personal characteristics (personality, knowledge, skills, etc.) manifested in typical behaviors that produce key business outcomes. Employee personal characteristics contributing to competencies include abilities (Crowl, Attwood and American Institute of Chemical Engineers [7], Marques, Zacarias, and Tribolet [12]), personality, skills and knowledge (Sebt, Shahhosseini, and Rezaei [15]), behavior patterns and habits (Woodruffe [24], Heneman and Ledford [11], Cooper [6]) and other characteristics including motives and values.

Many of these characteristics are underlying and subconscious for people. They are generic and include motives, traits, skills and knowledge (Boyatzis [2], Spencer and Spencer [19]). It's impossible to clear define how each of them affect behavior of a person and support competency as well. Fortunately, it is not necessary. Instead, we can detect behavior indicators that describe competencies.

Thus, using an behavioristic approach we are able to assess employee's competencies and predict his performance in doing some specific tasks. Unfortunately, there are additional variables beyond personal characteristics should be considered here: a set of variables that called workplace context.

Human behavior is highly affected by the surrounding environment. At the workplace this environment is created by social phenomena: organizational culture, organizational climate, manager behavior, etc. Boyatzis [2] states that competency concept reflects people capability (what they can do) and not necessary what they really do, regardless of context. Competencies are dependent on internal and external constraints, environmental and relationship factors significant to the job (Ennis [10], Svyantek and Bott [22], Simon [17]).

B. The workplace context

In this study the workplace context is a set of conditions in which employees act. It is described in terms of organizational culture, organizational climate, team and manager characteristics, etc. It is proposed that a workplace context that is appropriate and consistent with the competencies of employees will lead to higher individual and team performance.

1) Organizational Culture

Organizational culture is "a pattern of shared basic assumptions invented, discovered, or developed by a given group" (Schein [16]). Culture integrates patterns of human behavior including ways of thinking, speaking, acting (Deal and Kennedy [8]).

Organizational culture influence employees' behavior by impact on a person mental, emotional and attitudinal states that affect effective performance (Sparrow [18]), shared patterns that follow employees interpretations and ways to behave and control systems (Beyer, Hannah and Milton [1], Cartwright, Cooper and Earley [4]). Thus, culture affects some set of personal characteristics and behaviours that contribute competencies.

2) Team Climate

Organizational climate is "the feeling that is conveyed in a group by the physical layout and the way in which members of the organization interact with each other, with customers, or other outsiders" (Schein [16]). It is a powerful

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context factor that may change "previously 'acquired' behavior tendencies" and "the observed behavior patterns of the group members" (Stringer [21]).

Organizational climate is linked to motivation and affects personal feelings about a person's work (Stringer [21]), concern and care on customers conditions of group innovativeness and creativity (Wiley & Brooks [23], Michela & Burke [13]).

In this study organizational climate concept is applied to team level. Thus here and below the term "team climate" will be used.

3) Manager Behavior

Each manager has his own behavior model and theory of management based on assumptions, generalizations of previous experience and hypotheses made (Boyatzis [2]). Using behavior model, manager's skills, knowledge and personal characteristics are competencies that form unique management style of the manager.

Manager communicates values, norms and beliefs regarding organization, its mission and goals, clients, partners and workers. This may be or may be not consistent with "official" organizational culture. Thus, a manager's communication affects how organizational culture and its strength is perceived and shared by employees.

Manager also influence team climate. He may support, energize, inspire or push, punish and frustrates subordinated. His behavior affects employees' feelings about themselves, team members, manager and third parties. He creates emotional atmosphere which affects employees in a team.

A Manager's behavior affects all aspects of employees' work, perceptions and feelings about organization, team and job itself. Thus, manager may directly or indirectly affect employees' behavior, enable, and support or disable some competencies of employees.

C. Research model and hypothesis

The study assumed that there is an optimal set of context factors that support required individual competencies for specific organization, team, manager and task. The research model (Fig.1) includes three independent variables (organizational culture, team climate and manager skills) and one dependent variable (employee competencies). Employee performance, demographic characteristics and job family (task) are controlled characteristics.

The following hypotheses are proposed:

H1. The Organizational culture and Team climate have high correlation with Employee competencies.

H2. Manager skills have high correlation with Organizational climate.

H3. Manager skills high correlation with mployee competencies

H4. The higher Employee competencies the higher Employees performance.

D. Research methodology

This study uses survey methodology. Self-administrative questionnaires in electronic form are used to collect quantitative data about studying variables. The survey is conducted in 3 phases. In the first phase, respondents fill questionnaire about organizational culture and climate. Second phase questionnaire collects data about manager skills. Third phase is 360 degrees assessment of employees' competencies. Quantitative statistical technics are used to analyze data and test hypothesis.

III. Practical Applications of the Study Results

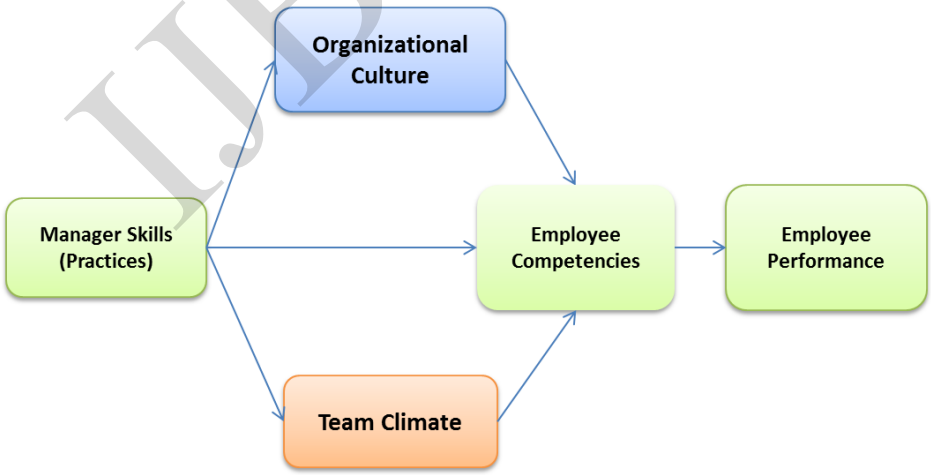


Fig. 1. Research model

The purpose of this study is to answer practical questions on effective management of individual and team performance. The study considers seven competencies that may improve team performance:

- Achievement orientation,
- Concern of order and quality,
- Information seeking,
- Initiative,
- Innovation orientation,
- Team work and cooperation,
- Team leadership.

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A. Achievement orientation (ACH)

Regarding to Cameron and Quinn [3], market type of organizational culture (1) supports results-oriented workplace, (2) has leaders who are hard-driving producers and competitors, (3) concerns on competitive actions and achieving stretch goals and targets in long term. It will likely emphasise values of winning, action orientation, being demanding, high pay for good performance, being results and achievement oriented, having high expectations for performance (Chatman, Caldwell, C.A.O. and Doerr [5]).

Achievement-oriented behavior requires supporting team climate as well. It may require (1) well organized work process with a clear definition of roles and responsibilities (structure dimension), (2) clear defined high standards of performance and looking for ways to improve it (standards dimension) and high feelings of responsibility of employees for their job (responsibility dimension). Appropriate reward and recognition should reflect importance of ACH as well (recognition dimension).

Manager skills and practices should support culture and climate features described above. Manager may (1) establish clear and specific performance goals and achievement excellence for his subordinates, (2) clarify who is responsible for what within the team, (3) clear and thoroughly explain tasks and sure they understood appropriately, (4) be positive and personally committed about achieving goals, (5) give subordinates feedback on how they are doing on their job (Stringer [21]). Thus manager practices will orient employees to achievements and support them to do so.

B. Concern of order and quality (CO)

CO is highly important in large organizations with dominant hierarchy culture type. It has formalised and structured work place, well defined formal procedures, rules and policies hold the organization together Cameron and Quinn [3]). However, even for small organizations this competency is important. To support CO, organizational culture may cultivate specific set of values: an emphasis on quality, being highly organized, being analytical, paying attention to details, being careful, being precise, predictability, being demanding and being rules oriented.

From a team climate perspective, employees should feel workplace as well organized with a clear definition of roles and responsibilities, recognition and commitment of others to such behavior.

To support CO competency, a manager may (1) pay attention on formulating a standard set of procedures and policies that help team members to get work done, (2) make certain that all of team members know why they work on task, how it benefit to whole team and company, and customer as well, (3) help everybody to build a work map of their roles and responsibilities, (4) demonstrate his own CO competency by using “to do” lists, prioritizing tasks and team management, aligning his own and team work with organizational mission, vision and strategy.

C. Information seeking (INFO)

INFO competency is important factor of good knowledge management supporting culture. It is more likely in organizations with market and adhocracy culture type. The nature and values of these types of culture engage people to seek information about market, technologies, competitors and customers. It will likely emphasise values of being analytical, paying attention to details, being careful, being precise, listening to customers, predictability.

Team climate characteristics that may support INFO include feeling of responsibility for their job and teamwork, support for courage to solve problems on their own and commitment of all team members to follow this behavior.

To support INFO competency, a manager may (1) pay attention on keeping track of best competitors performance, analyzing market and technology trends, making benchmarking of solutions, (2) strive for world-class quality of products and services, engaging employees to contribute their best efforts, thinking, ideas and solutions, (3) communicate vision of the future often, (4) invite people to challenge the vision, traditional approached and solutions.

D. Initiative (INT)

INT competency is very unlikely for hierarchy types of culture because of many rules and restrictions. However, it is important factor of success for market and adhocracy culture type organizations. It drives organization to gain competitive advantage, develop new products and technologies, create and implement innovations. Action orientation, fast-moving, being quick, to take advantage of opportunities, taking risk and initiative values support INT competency.

Team climate characteristics that may support INT include feelings of support to risk taking and action orientation from manager and team members and their commitment to do the same.

To support INT competency, a manager may (1) make appraisals for people acting proactively, taking initiative to solve some problem improve performance, recognize and thank people for taking a risk and responsibility, (2) measure improvement, not just a task accomplishment, (3) make continuous improvement a key feature of the culture in your unit.

E. Innovation orientation (INNOV)

INNOV competency is important for organizations with market and adhocracy culture type. The nature and values of these types of culture engage people to make changes and improvements to reach success. Values that may support INNOV include a willingness to experiment, being innovative, being quick to take advantage of opportunities, risk taking, security of employment, being highly organized.

Team climate characteristics that may support INNOV include feelings of support to risk taking and action orientation from manager and team members and their commitment to do the same; recognition of importance of innovative behavior by rewards and appraisals.

To support INNOV competency, a manager may (1) make people accountable for generating innovative ideas as a part of their job description, (2) support brain-storm and idea-sharing events, (3) reward ideas champions, sponsors and mentors of ideas implementation, (4) encourage action learning in the team, (5) try pilots and experiment in uncertain environment, (6) make success visible and joyful, celebrate even small wins.

F. Team work and cooperation (TW)

TW competency is important for any organization. However, the clan culture type describes the better conditions for supporting team work and cooperation. It

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proposes shared values (working in collaboration and cooperation with others, having integrity, being team oriented, respect others and sharing information freely) and goals, cohesion; teamwork, participation, consensus, employee involvement programs, corporate commitment to employees; friendly place to work where people share a lot themselves; leaders are thought of as mentors; commitment is high and based on loyalty and moral; success is defined in terms of internal climate and concern for people.

Team climate should support feeling of responsibility for the team and from the team, commitment of team members and manager to teamwork, trust and support.

To support TW competency, a manager may (1) establish clear roles, goals and mission for the team, (2) maintain a free flow of communication and ideas sharing, (3) stand up for your team and appraise them in public, (4) communicate a caring about team members and their interests, (5) allocate time for teambuilding events and developing of your team, (6) be supportive and helpful to team members in their day-to-day activities.

G. Team leadership (TL)

Team leadership is important competency for any culture type. However, for each culture type it will have different style and should be consistent with culture of organization. Nevertheless, leadership, being customer oriented, autonomy being supportive and team oriented values are important to support this competency.

Team climate characteristics that may support TL include feeling of responsibility for the team, commitment to the organizational goals, and recognition of leadership, high standards and clear structure at workplace.

To support TL competency, a manager may (1) support taking risk and responsibility; delegate authority, (2) provide opportunity for a team to learn new tasks, (3) enrich their job by adding responsibilities to take care about team and developing others, (4) encourage them to participate in setting goals and making important decision, (5) encourage team members to initiate tasks or projects they think are important.

IV. Conclusions and Limitations

Employees' competencies are important factors underpinning individual and team performances. They are affected by personal characteristics and the social context as well. Corporate culture, climate in the team, values and beliefs shared by team members and manager, as well as real practices (skills) of manager may enable, support or disable competencies.

Appropriate workplace environment and management practices may enable, support and develop required competencies of the team members. To prove this the survey based study is designed. The study involves teams from technology companies in Hong Kong and China. Results of the study will help to manage teams more efficiently.

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