The Worth of Steady Digital Team Formation Strategy
A Case Study of Bruce Tuckman's Model in Software Industry

Daniel Beyene Solomon
PhD Student in Project Management and Marketing
LIGS University
Hawaii USA
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Abstract

Digital workplace has become an integral part of the modern world (Thomas, 2011). Employees are communicating and collaborating digitally in unprecedented ways, where people are working remote without having handshake and/or a face to face experience one another (Suri, 2019). In such work environments, purpose oriented team development is an archetypal ingredient in the formation of strong team destined to success (Gregory, 2018). This article closely examines Tuckman's model of team formation and tries to stress the relevance of the model in building a focused kind of digital team in the digital world. To this end, the study emphasizes on descriptive analysis of the information gathered from secondary data sources, along with primary data obtained thru questionnaire and interviews from IT professionals engaged in digital teams. The finding exhibits that Tuckman's model can have a significant contribution in an attempt to build a purpose oriented digital team in the IT industry, and by so doing enhance precision, innovation, and aptitude while adding upon the quality of the product.

Key words – Tuckman's model of team formation, digital team, and purpose oriented team

1. Introduction

Working from home has become the new normal for thousands of companies (Streitfeld, 2020). According to (Wingard, 2020) and (Akala, 2020) plentiful firms which includes but not limited to Twitter, Facebook, and Nationwide Insurance, have required a good portion of their employees to telecommute. That being said, in the absence of a shared vision, remote work can be frustrating and even isolating (Hickman, 2019) and (Valet, 2020). It might lead to a stern dearth of direction leaving the team confused about purpose (Jon R. Katzenbach, 2009). In order to clear the haze and bring about a focused and goal oriented kind of team, it takes leaders to walk their teams thru certain stages of team development (Care, 2013).

This paper examines the five stages of team formation suggested by Psychologist Bruce Tuckman, described as forming, storming, norming, performing, and adjourning (Cates, 2019). By so doing the paper attempts to draw inference into the significance of the model in building a purpose oriented digital team. The paper takeoffs with a very brief introduction of the study and review of pertinent literatures, respectively. Then, after briefly exposing the methodology used to conduct the study, it deliberates and concludes on the findings.

1.1.Statement of the problem

Recently, telecommuting has become a technology-driven innovation that seemed to offer benefits to both employees and executives (Lipton, 1996), (Abrams, 2019) and (Hamilton E. , 2019). According to the U.S. Bureau of Labor Statistics (Economic News Release, 2019), well over 26 million Americans which counts to 16% of the total workforce, work remotely at least part of the time. (Peek, 2020), (Nilles J. M., 1996) and (Messenger, 2019) think, because of the advances in communication technology and internet access, teleworking, would grow in the next decade and following same, the formation and expansion of digital team specially in the IT industry would augment.

(Sammi, 2019) , (Jamal, 2014), and (Nilles J. M., 1994) tend to accept the fact that such flexible arrangements of work could eliminate bad traffics and long commutes which burns down energy gratuitously. Instead, it promotes mobility, agility of the team members and encourages them to make use of the best of their creative robustness (Wisenberg-Brin, 2013). (Ritter, 2018), underscores the fact that teleworking gives workers a certain degree of flexibility which in turn contributes to the motivational and cognitive factors influence individual creativity.

Despite these advantages, there are certain challenges in working away from the office. According to (Dick, 1998) , under a leadership where there is a paucity of collective vision and consistent strategy and collaboration, it might be difficult to deliver in due time and within budget without compromising quality. On the contrary, team members might build such feelings as dispassion and lack of optimism and resilience. According to (Snizek, 1995), this, in turn, might severely impact the motivation of the team for the project, minimizes its level of persistence, ingenuity and inspiration, which, all together, would cost the company substantively.

1.2. Purpose

Given the statement of the problem highlighted above, the purpose of the study is to look into the significance of the team formation model by Bruce Tuckman to camber the problem that might arise from the digital work environment that lacks shared vision, mission and strategy thru a strong team development effort that lasts.

1.3. Hypothesis

This research assumes the fact that Tuckman's model of team formation could significantly contribute in the realization of a purpose oriented, motivated and energetic digital team that would deliver in due time and within budget in the IT industry. The null hypothesis, therefore, is this model can't have any impact on the aforesaid team formation and its deliverables.

1.4. Significance

In the contemporary world the work environment is changing a lot (Alton, 2018). Working from home is a strategic move (Castenson, 2020), not just a tactical one that saves money (Robinson, 2020). Hence, quite a number of organizations have been trying for decades to make working from home work (Flaherty, 2020). Some have succeeded while others have failed and disappeared in the sands of time and change (Kelly, 2020), mainly because they had no or little capability to put

their employees together and help them to work towards a geared interest and a shared vision (Allen, 2020).

Now a days, professional team members in the IT industry seem to be far more diverse, dispersed, digital, and dynamic (Martine Haas, 2016). According to (Mortensen, 2016) when they face new hurdles, their success hinges on a core set of fundamentals for group collaboration. This might include sundry sorts of team development modules such as Tuckman's model of team formation. According to this model, a consistent team development metrics may play a substantial role in improving how well the team performs, from refining employee habits to increasing work efficiency (Gregory, 2018). Hence, this paper could be of a great significance for companies still straggling putting together their digital teams towards achieving company objectives.

1.5. Scope and limitation

There are quite a number of models and theories that leaders could use to motivate their respective subordinates to accomplish the designated goals. To mention some but few, the theory by House (1971) is about how leaders motivate subordinates to accomplish designated goals (House, 1971), Leader-member exchange (LMX) theory which conceptualizes leadership as a process that is centered on the interactions between leaders and followers (JANSE, 2019), the social learning theory was proposed by Albert Bandura (McLeod, 2016), and the group and exchange theories of leadership also known as Social Exchange Theory (Cherry, 2020). Nevertheless, it would be unthinkable to try to manage all these models into this succinct study. Hence, its scope has been limited to the aforementioned model by Bruce Tuckman.

What's more, this model can be studied from sundry sorts of views and perspectives. For instance, (Bonebright, 2010) presents a historical overview of the Tuckman model describing the stages of group development in depth, while (Smith, 2005) sees the effectiveness of the model if implemented in a small group team. (VLIET, 1914), on the other hand, focuses only on the historical account of Bruce Tuckman. This clearly exhibits the fact that how deep and far the subject matter is. Therefore, the scope of the study has been limited to discuss the worth of the model by Bruce Tuckman in a dynamic contemporary digital and agile work environment.

2. Review of related literature

Following the footsteps of the swift progress in the ICT world, digital technologies are getting integrated in many aspects of life (Mira Burri, 2012). Hence, according to (De Alwis, 2010) the digital world presents a whole a lot of benefits along with some sound challenge for organizations, employers, and employees. In this regard, (Hamburg, 2019), (L.Stone, 2015) and (Mishra, 2010) think, if a company desires to get rewards from the digital renovation and maintain its clients, productivity, and employees, it should be adaptive towards the new digital work environment and build up its work culture around digital advances. In other words, improving on the team's success rate requires the team to be clear with it is doing what it is doing (Gregory, 2018).

To this end, (Hamilton K. , 2009) , (Marks M. A., 2002) and (Marks M. A., 200) argue, engaging the employees around an unswerving team formation model based training would increase performance, innovation and quality. (Lee, 2006) also suggests sharing vision, setting strategies

and doable goals are important factors in the discourse of human capital management. What's more, (Pardo, 2006), (Martin, 2014) and (Posner, 2009) underscore the contribution of such a discussion in the process of the forming a strong, innovative and productive team. In the digital word, achieving without such a strong team might be mind-blowing (Marquis, 2019). It would be suggestively difficult if not totally impossible.

(Utley, 2016) considers the fact that building a team around a shared vision as a must to do responsibility of a leader. According to her achieving might be very difficult if not totally impossible. In support of this notion, (Dean Tjosvold, 1993) says a leader must not deprive his/her company of the benefit of shared vision and building up a robust team thru a persistent training, especially if the company operates remotely on a digital work environment. In this regard, (Farrell, 2009) thinks the leader need to apply a certain model or theory of team formation, development and putting it to action towards achieving the desired goal.

Though there are quite a number of such models out there, this research will be focusing on understanding the stages of team formation by elaborating on Bruce Tuckman's five step model for a couple of reasons. First of all the model is agile (FERGUSON, 2020), thus can be used to build a sort of agile team in the digital work environment (RADIGAN, 2020). Secondly, it take the training from ground up. In other words, it always flinches from a formation and goes up until it creates a performing team (Understanding the Stages of Team Formation, 2020). What's more, the stags form vicious circle and, therefore, whenever a new member is added to the team, the model incorporates him into all stages of the entire exercise (Tuckman, 2001). Last but not list, it is accommodative. The various stages in the team formation process are always open for new concepts, perceptions and perceptions.

3. Methodology

Research is a logical study piloted causatively towards a certain conclusion through a systematic collection, interpretation and evaluation of data in an orderly mode (Dönmez, 2016), (Shields, 2013) and (Cheprasov, 2020). This particular research is all about Bruce Tuckman's stages of team formation; Forming, Storming, Norming, and Performing. Therefore, it exclusively depends on the secondary data gathered from review of related literatures, current industry practices, and scientific norms and trends. Still and all, primary data has also been collected thru a brief questionnaire dispatched to a total of thirteen IT professionals serving the industry for over five successive years at different capacities and calibers.

The researcher has some personal encounters with some of these informants. He has been working with some of them at various times in different IT industries such as IBM, Maximus, Northrop Grumman, AllTech, and Integrated System Inc. What's more, an attempt has also been made to collect primary data from some of these informants in a sort of interview and/or discussion, which has helped the researcher to hammer more on the findings. In order to properly decide the sample size and analyze the data therefrom, both GPower and SPSS have been implemented. To this end chi square test is used to confirm the degree of the significance of the findings.

4. Discussion and findings

The discussion focuses on four important stages. First, it defines the sample size of the research population using GPower. Second, there is a very brief demographic analysis of the informants. Third, we have Tuckman's developmental model discussed in the light of the experiences of the informants designated to the study. Finally, the research brings forth its argument on whether Tuckman's developmental model has a significant relationship with the success or failures of the individual teams, the informants belong to.

4.1. Defining the sample size

The sample size was defined using a t-test for correlation: point biserial model on GPower with a default effect size d of 0.7071068, error probability of 0.05, and a power of 0.95. As shown below, the sampling distribution denoted by a dotted blue line, while the population distribution by a solid red line. A red shaded area delineating the probability of a type 1 error, a blue area the type 2 error, and a pair of green lines demarcating the critical points t are evidently marked.

To test the hypothesis of this research at the default none certainty parameter of 3.6055515, circuit t of 1.7958848, Df of 11, significance level of 0.05, and actual power of 0.9579145, GPower endorsed a total sample size of 11 informants. The informants were intentionally selected, with due concerns to their respective IT professional experience and exposure to telecommuting as a part of a digital team.

4.2. Demographic Information of the Informants

A total of 13 informants have been involved in this research; 6 (42.6%) females and 7 (53.8%) males. Of them 30.8% have completed their first degree level of education, while 53.8% and 15.4% have their 2nd and 3rd degrees, respectively. In terms of relevant industry experience in IT related fields, 53.8% of the informants have 10-14 years of valid experience in the IT industry. 30.8% and 15.4% of the informants have 5-9 and 15 and greater years of experience. In terms occupation, we have 1 business analyst, 1 scrum master, 2 project managers, 5 developers, 3 system analysts, and 2 test engineers. All of the informant range between 25-51 years of age and have a solid experience of telecommuting or being a digital workforce working remotely from home.

4.3. Tuckman's Model of Team Formation

In the 1960s psychologist Bruce Tuckman came up with a four level of team development model: forming, storming, norming, and performing (Ryder, 2019). Later on, he added a fifth stage, adjourning, which is sometimes known as mourning (Ottosson, 2019). This part of the discussion deliberated on each of these five stages of team formation and discuss their relevance in the formation of a digital team in the light of the data gathered from the field.

4.3.1. Forming

At this stage, the team is basically a collection of individuals opening up to think about a given project and the role they would play in (Ryder, 2019). Team members share their backgrounds, interests, and experiences with the rest of the group, and first impressions begin to form (McGrew, 1999), (Cassidy, 2007), (Fall, 2006) and (M D Weber, 1991). In the interview conducted with the informants, nearly all of them underscored the fact that they have all passed thru this stage of team foundation model, though the majority of them don't seem to know that this model was built by Bruce Tuckman in the 1960s. According to them, in this stage they spend the majority of their time in getting to know each other, getting thru the onboarding documents, getting accesses and tools which they need to undo their respective responsibilities.

4.3.2. Storming

Storming is the second predictable stage of team formation, which usually feels stranger to the team under construction (Ryder, 2019). In this stage, the team members compete with each other for status and acceptance of their ideas (K, 2013). They have different opinions on what should be done and how it should be done which causes conflict within the team (PRIESTLEY, 2013). Nearly all of the informants have been thru this experience. According to them, they have observed a sort of conflict, polarization of opinions, sub-grouping by personality or work style, and background. Nevertheless, with the help of their PMs, they were able to settle the issues before it cracks the team and impact deliverables.

4.3.3. Norming

There is definitely a sense of teamwork among the group (Ryder, 2019). Though, there might be arguments at a certain level, members support each other on the project, help solving issues, and collaborate on making decisions as a team (PRIESTLEY, 2013). This is not a unique experience for the informants that I have worked with. They know it, and have been thru it. According to them, at this junction, they were able to stand as a team and focus on the work items sitting in their respective plates. Overall, at this junction, the team members have started becoming friends. They help each other and enjoy each other's company, while working on the project.

4.3.4. Performing

The performing stage is when the synergy starts to play out (Ryder, 2019). The team can brainstorm itself effectively to solve problems and are highly motivated to attain goals and achieve as a team (Gregory, 2018), (Dean Tjosvold, 1993), and (Fall, 2006). "This is a critical stage, we all stand as a team focusing on what we have to deliver to the client." one of the informants said during the interview. As many of them tend to agree, at this stage of the team, everybody focuses

on undoing the responsibilities vested on him/her by clearing the plate. Of course, if need be they work together on addressing issues, dry running and debugging bugs, so that they would be able to deliver a bug free application.

4.3.5. Adjourning

This stage, also refers as transforming, is time to dissolve the team, likely after it has completed its tasks and hence fulfilled its purpose (Lombardi, 2016). At this point the team leader takes the time to celebrate the success of the team and evaluate its performance (Mortensen, 2016). According to the informants used in here, they used this time to reflect on the project and extend their best wishes and good-byes to one another.

4. 4. What worth is Tuckman's model in the formation of digital team?

This days telecommuting, which is an employment arrangement in which the employee works outside of the employer's office, is becoming a new normal in the IT industry (Robinson, 2020). The team that is involved in such a work from home endeavor largely depends on the internet to undo its responsibilities, hence, this research refers this team as a digital team. As indicated above, the informants involved in this research are part and parcel of such a digital team. In other words, they work from home, and their work has a strong dependency on the internet, for accessing the work environment remotely.

To credibly address the question in the subtopic, the research has tried to find out if there is a sort of significant association between timely deliveries and continues practice of Tuckman's model by the team. The finding exhibits that 87.5% of the entire informants always deliver in time and within budget and practice Tuckman's model of team formation, while 12.5% do deliver in time and within budget and practice the said model most often than not. The probability of making a type 1 error is very insignificant or it is well below 0.05.

Hence, there is a strong evidence attesting the relationship between timely and within budget deliveries and continues practice of Tuckman's model in the IT industry (chi-square = 0.015, DF =1, and $p < 0.05$). This marks the worth of Tuckman's model of team formation in the digital work environment commendable.

5. Conclusion and recommendation

Building a digital team that delivers in time and within budget without compromising quality is the key aspects of success in the IT industry. In this regard, Tuckman's model of team formation is a commendable investment to practice. It would put the team together and on the same page. It also makes them purpose oriented, motivated and focused to achieve. Above all, it improves the overall experience of the team and helps it to be able to contribute in equally important manner to the ultimate success and productivity of the team.

Bibliography

- Akala, A. (2020). More big employers are talking about permanent work-from-home positions. *CNBS*.
- Allen, T. (2020). The Bitter Truth About Why People Fail To Succeed In Their Jobs. *Forbes*.
- Alton, L. (2018). Workplace Changes Are Accelerating: Why And What Millennials Should Do About It. *Fobes*.
- Baadani, J. (2014). *About Telecommuting and At Home Work Arrangements*. New York.
- Bennis, W. (2007). *Organizing Genius: The Secrets of Creative Collaboration*. New York : Basic Books.
- Bodla, D. B. (2018). *Research Methodology*. Retrieved from Meaning of a research: <http://ddegjust.ac.in/studymaterial/mba/cp-206.pdf>
- Bonebright, D. A. (2010). 40 years of storming: a historical review of Tuckman's model of small group development. *Human Resource Development International*.
- Care, T. L. (2013). *Team Leadership and Partnering in Nursing and Health Care*. New York: Springer.
- Cassidy, K. (2007). Tuckman Revisited: Proposing a New Model of Group Development for Practitioners. *SAGE*.
- Castenson, J. (2020). How Working From Home Is Changing The Way We Think About Where We Live. *Fobes*.
- Cates, M. F. (2019). *Seven Steps to Success for Sales Managers (Paperback)*.
- Cheprasov, A. (2020). The Nature of Scientific Research. *Study.com*.
- De Alwis, A. C. (2010). The impact of electronic human resource management on the role of human resource managers. *Digital Library University of West Bohemia*.
- Dean Tjosvold, M. M. (1993). *The Emerging Leader: Ways to a Stronger Team*. New York : Lexgiton Books.
- Dick, G. (1998). Telecommuting: management difficulties arising from workplace perceptions. *IEEE*.
- Dönmez, C. Ö. (2016). What is Scientific Research and How Can it be Done? *Turk J Anaesthesiol Reanim.*
- Fall, K. A. (2006). Co-Leader Stages of Development: An Application of Tuckman and Jensen (1977). *Journal of Specail Work Group*.
- Farrell, M. (2009). Informal roles and the stages of interdisciplinary team development. *Journal of Interprofessional Care*.
- FERGUSON, B. (2020). The agile guide to winning at team development. *worklife*.
- Flaherty, C. (2020). Faculty Home Work. *The Key*.
- Gjonça, E. (2007). Socio-demographic characteristics. *Journal of University College London*.
- Goodman, R. (2019). Effective Team Leadership.
- Gregory, G. (2018). *In today's millennial workplace, team members seek a sense of purpose*. HDI.
- Hamilton, E. (2019). *B r i n g i n g Work Home*. Boston : Boston College.
- Hamilton, K. (2009). The Effect of Team Training Strategies on Team Mental Model Formation and Team Performance Under Routine and Non-Routine Environmental Conditions. *PennState Univeristy*.
- Hickman, A. (2019). Workplace Isolation Occurring in Remote Workers. *Walden University*.
- House, R. J. (1971). A Path Goal Theory of Leader Effectiveness. *Johnson Graduate School of Management, Cornell University*.
- Jamal, B. (2014). *About Telecommuting and At Home Work Arrangements*. New York.
- JANSE, B. (2019). Leader-Member Exchange Theory (LMX). *toolshero*.
- Jon R. Katzenbach, . K. (2009). *The Discipline of Teams*. Boston : Harverd Business Press.
- K, A. (2013). *Managerial Skills*. New Delih: S.Chand and Company.
- Kelecha, M. (2018). Protest, Repression and Revolution in Ethiopia. *African Political Economy*.
- Kelly, J. (2020). Here Are The Companies Leading The Work-From-Home Revolution. *Forbes*.
- Lipton, M. (1996). Demystifying the Development of an Organizational Vision. *MITSloan*.
- Lombardi, V. (2016). The Five Stages of Team Development: What Stage Is Your Group In? *Corporate team building*.
- M D Weber, a. T. (1991). Student group approach to teaching using Tuckman model of group development. *Advance in Physiology Education*.
- Marks, M. A. (200). Performance implications of leader briefings and team-interaction training for team adaptation to novel environments. *Journal of Applied Psychology*.
- Marks, M. A. (2002). The impact of cross-training on team effectiveness. *Journal of APplied Psychology*.
- Marquis, A. (2019). Importance of Teamwork in Organizations. *Chrono*.
- Martin, J. (2014). The importance of inspiring a shared vision. *University Hospital Basel*.
- Martine Haas, M. M. (2016). The Secrets of Great Teamwork. *PUBMED*.
- Mcgreww, J. F. (1999). Software Team Formation and Decay: Extending the Standard Model for Small Groups. *SAGE*.
- Messenger, J. C. (2019). *Telework in the 21st Century: An Evolutionary Perspective (The ILO Future of Work)*. New York.

- Mishra, A. (2010). Information Technology in Human Resource Management: An Empirical Assessment. *Public Personnel Management*.
- Mortensen, M. (2016). The Secrets of Great Teamwork. *ResearchGate*.
- Nightingale, J. (2017). *Leadership Is Not About Your Good Intentions*. M.
- Nilles, J. M. (1994). *Making Telecommuting Happen: A Guide for Telemanagers and Telecommuters* (VNR computer library). New York.
- Nilles, J. M. (1996). *Managing Telework: Strategies for Managing the Virtual Workforce Hardcover – August 31, 1998*. New York.
- Ottosson, S. (2019). *Developing and Managing Innovation in a Fast Changing and Complex World*.
- Pardo, T. A. (2006). *Knowledge sharing in cross-boundary information system development in the public sector*. Springer Science.
- Peek, S. (2020). Communication Technology and Inclusion Will Shape the Future of Remote Work. *Business News Daily*.
- Posner, J. M. (2009). To Lead, Create a Shared Vision. *Harvard Business Review*.
- PRIESTLEY, D. (2013). Forming, Storming, Norming and Performing: The Stages of Team Formation. *Venture Team Building*.
- Riel Miller, W. M. (1998). *21st CENTURY TECHNOLOGIES PROMISES AND PERILS OF A DYNAMIC FUTURE*. Publié en français sous le titre .
- Ritter, E. F. (2018). *Individual Creativity in the Workplace*. New York.
- Robinson, B. (2020). How Remote Working Is Reshaping A Future New World Of Work. *Fobes*.
- Ryder, L. (2019). Storm To Perform: The 4 Stages Of Team Productivity. *Terello*.
- Smith, M. K. (2005). Bruce W. Tuckman – forming, storming norming and performing in groups. *Educational Reserach*.
- Snizek, W. E. (1995). Virtual offices: some neglected considerations. *ACM*.
- Streitfeld, D. (2020). The Long, Unhappy History of Working From Home. *The New York Times*.
- Suri, . Y. (2019). *Transforming Organizations Through Flexible Systems Management*. New Delih: Springer.
- Tuckman, B. (2001). Developmental Sequence in Small Groups. *A Research and Applications Journal*.
- Understanding the Stages of Team Formation. (2020). *Mind tools*.
- Utley, T. (2016). The Importance Of Shared Vision In Social Impact Organizations. *Forbes*.
- Valet, V. (2020). Working From Home During The Coronavirus Pandemic: What You Need To Know. *Forbes*.
- VLIET, V. V. (1914). Bruce Tuckman. *toolshero*.
- Wingard, J. (2020). The Remote Office Is The New Normal: 3 Reasons Leaders Are Shifting Strategy. *Forbes*.
- Wisenberg-Brin, D. (2013). Telecommuting Likely to Grow, Despite High-Profile Defections. *Society for Human Resource Management*. Retrieved from.