Building Agile Workforce for Facing Digital Industry

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Abstract: Changes in technology have encouraged the organization to make changes to survive in a dynamic environment. By utilizing digital innovation, the business industry begins to develop itself and play in the digital market. Competition in this digital business can certainly be won if human resources and ways of working within the organization make changes. Changes from the manual work to digital work put forward the principle of agility. Many methods developed to create agile workforce include Lean Strartup, Scrum, Holacrarcy, design thinking, etc. This paper is conducted to describe building agile workforce methods. It purposes to generate a mapping of human development in the digital era by applying a descriptive qualitative approach and literature review of some previous studies. The results of this study are description scrum method concept of working as a strategy for facing the competitive industry in the digital era.

1 INTRODUCTION

Rapid changes in the business world require organizations to always adapt and be able to innovate to survive in the industry. Changes occur in recovering work, for organizations must change and adjust old ways of working with new ways of working so that the targets being overcome recover. Changes occur more quickly because it is supported by the rapid technological development of the transition of digital technology 4.0. Answering these challenges requires a work method called Agile which has been applied by organizations to increase the speed and accuracy of work and productivity. Agile is a set of methods, principles, managerial frameworks that require fast and agile work methods to complete a work target.

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frameworks that require fast and agile work methods to complete a work target. Historically, Agile was born from techniques used by innovative Japanese companies in the 70s and 80s such as Toyota, Fuji, and Honda. Then in the mid-90s, Jeff Sutherland was frustrated with projects that were out of schedule and needed higher budgets. This condition makes Sutherland try to create a Scrum framework for implementing Agile work methods. The use of the Scrum work method is not limited to engineers or developers but the Scrum framework can be useful for other types of projects such as marketing, construction and so on. By applying the Scrum work method, can complete the work in large quantities and shorter time (Cervone, 2011).

Changes in the business world that is very fast demanding, fast and accurate work methods to produce a product that is accepted by the market so that makes the organization can compete with the industry and maintain its existence. Fowler & Highsmith (2001) in Agile Manifesto, Agile is based on a set of principles that focus on customer value, iterative and incremental delivery, intense collaboration, small integrated teams, self-organization and small and continuous improvements. It is often stated that Agile Management works best with small teams. According to Bustamante and Sawhney (2011), the ideal Agile project team is small, co- located, communicate face to face on a daily basis and has an

ideal team size not exceeding nine people. Along with this, Agile methods such as Scrum recommend an optimal team size of seven plus or minus two. However some industry specialists claim that Agile is a one size fits all methodology and that it can be scaled up to a 150 person team.

People and team management are based on various models such as "The five dysfunctions" (Lencioni, 2016) and Tuckman's model (Tuckman & Jensen, 1977). All of these models require that team members have a lot of interaction. The more persons there is on a team, the more interaction is required and the more difficult it is to manage such teams. In an Agile team, the project manager must define the relationships between the roles to enable the effective coordination and control of the project. Through this paper, we will discuss the application of Scrum's work methods to produce Agile work methods in managing human resources. The work pattern of Scrum is believed to be a fairly complex but effective work method to produce the novelty of a product. Referring to these conditions, human resource management is needed as a team that can work together.

2 LITERATURE REVIEW

2.1 Agile Principles

According to Agile Manifesto, agility principles motivated and empowered software developers – relying on technical excellence and simple designs – create business value by delivering working software to users at regular short intervals. These principles have spawned a number of practices that are believed to deliver greater value to customers and change people management. At the core of these practices is the idea of self-organizing teams whose members are not only collocated but also work at a pace that sustains their creativity and productivity. The principles encourage practices that accommodate change in requirements at any stage of the development process. Furthermore, customers (or their surrogates) are actively involved in the development process, facilitating feedback and reflection that can lead to more satisfying outcomes (Dingsøyr, Nerur, Balijepally, & Moe, 2012). The principles are not a formal definition of agility, but are rather guidelines for delivering high-quality software in an agile manner. While individual principles and practices of agile development were not entirely new to the software community, the way in which they were put together into a cogent

"theoretical and practical framework" was certainly novel (Williams and Cockburn, 2003). Ever since the manifesto was articulated, practitioners and researchers have been trying to explicate agility and its different facets. At its core, agility entails ability to rapidly and flexibly create and respond to change in the business and technical domains (Henderson-Sellers and Serour, 2005). Other aspects of agility explored include lightness or leanness (i.e., having minimal formal processes) (Cockburn, 2007) and related concepts such as nimbleness, quickness, dexterity, suppleness or alertness (Erickson et al., 2005). In essence, these ideas suggest a "light' methodology that promotes manoeuvrability and speed of response" (Cockburn, 2007).

According to Deemer, Benefield, Larman, & Vodde (2010) The agile family of development methods were born out of a belief that an approach more grounded in human reality – and the product development reality of learning, innovation, and change – would yield better results. Agile principles emphasize building working software that people can get hands on quickly, versus spending a lot of time writing specifications up front. Agile development focuses on cross-functional teams empowered to make decisions, versus big hierarchies and compartmentalization by function. And it focuses on rapid iteration, with continuous customer input along the way. Often when people learn about agile development or Scrum, there's a glimmer of recognition – it sounds a lot like back in the start-up days, when we "just did it."

By far the most popular agile method is Scrum (See Figure 1). It was strongly influenced by a 1986 *Harvard Business Review* article on the practices associated with successful product development groups; in this paper the term "Rugby" was introduced, which later morphed into "Scrum" in *Wicked Problems, Righteous Solutions* (DeGrace and Stahl, 1993) relating successful development to the game of Rugby in which a self-organizing team moves *together* down the field of product development. It was then formalized in 1993 by Ken Schwaber and Dr. Jeff Sutherland. Scrum is now used by companies large and small, including Yahoo!, Microsoft, Google, Lockheed Martin, Motorola, SAP, Cisco, GE, CapitalOne and the US Federal Reserve. Many teams using Scrum report significant improvements, and in some cases complete transformations, in both productivity and morale. For product developers – many of whom have been burned by the "management fad of the month club" – this is significant. Scrum is simple and powerful.
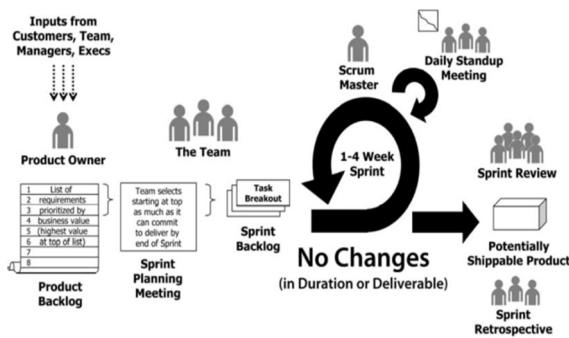
Figure 1: Scrum - Agile Process (Deemer, Benefield, Larman & Vodde, 2010).

Deemer, Benefield, Larman & Vodde (2010) explained that the Scrum work process to produce Agility work methods begins with the product owner, the sprint planning meeting by the team that the whole process will be managed by the Scrum master with the work target to produce a potential product for the company and consumer. The following is an explanation of the Scrum Agile Process. Scrum or agile process techniques have been used in several companies in Indonesia to produce a product that has a competitive advantage and can be accepted by the market. This step starts from determining or choosing a team that can work and thinks quickly right (sprint think). For example one of the telecommunications companies in Indonesia selected hundreds of employees and selected approximately 10 people who were placed as The Team. This team has challenges and tasks that must be completed every week. the work of the team will always be evaluated and monitored by the Scrum Masters determined by the company. This activity takes place continuously in a period of approximately 6 to 12 months. The output of this team produces a product that is in line with market expectations and can produce innovations and profitable profits for the company.

2.2 Scrum Basics

Deemer, Benefield, Larman, and Vodde (2010) explain the process of the Scrum method. Mentioned that scrum is an iterative, incremental framework. Scrum structures product development in cycles of work called Sprints, iterations of work which are typically 1-4 weeks in length, and which take place one after the other. The Sprints are of fixed duration – they end on a specific date whether the work has been completed or not, and are never extended. At the beginning of each Sprint, a cross-functional team selects items from a prioritized list of requirements,

and commits to complete them by the end of the Sprint; during the Sprint, the deliverable does not change. Each work day, the team gathers briefly to report to each other on progress, and update simple charts that orient them to the work remaining. At the end of the Sprint, the team demonstrates what they have built, and gets feedback which can then be incorporated in the next Sprint. Scrum emphasizes producing working product at the end of the Sprint is really "done"; in the case of software, this means code that is fully tested and potentially shippable.

In Scrum, there are three primary roles: The Product Owner, The Team, and The ScrumMaster. The Product Owner is responsible for achieving maximum business value, by taking all the inputs into what should be produced – from the customer or end-user of the product, as well as from Team Members and stakeholders – and translating this into a prioritized list. In some cases, the Product Owner and the customer are the same person; in other cases, the customer might actually be millions of different people with a variety of needs. The Product Owner role maps to the Product Manager or Product Marketing Manager position in many organizations.

The Team builds the product that the customer is going to consume: the software or website, for example. The team in Scrum is "cross-functional" – it includes all the expertise necessary to deliver the potentially shippable product each Sprint – and it is "self-managing", with a very high degree of autonomy and accountability. The team decides what to commit to, and how best to accomplish that commitment; in Scrum lore, the team are known as "Pigs" and everyone else in the organization are "Chickens" (which comes from a joke about a pig and a chicken deciding to open a restaurant called "Ham and Eggs," and the pig having second thoughts because "he would be truly committed, but the chicken would only be involved").

The team in Scrum is typically five to ten people, although teams as large as 15 and as small as 3 report benefits, and for a software project the team might include analysts, developers, interface designers, and testers. The team builds the product, but they also provide input and ideas to the Product Owner about how to make the product as good as it can be. While team members can split their time between Scrum projects and other projects, it's much more productive to have team members fully dedicated. Team members can also change from one Sprint to the next, but that also reduces the productivity of the team. Projects with larger teams are organized as multiple Scrums, each focused on a

different aspect of the product development, with close coordination of their efforts.

The Scrum Master is one of the most important elements of Scrum success. The ScrumMaster does whatever is in their power to help the team be successful. The ScrumMaster is not the manager of the team; instead, the ScrumMaster serves the team, protects the team from outside interference, and guides the team's use of Scrum. The ScrumMaster makes sure everyone on the team (as well as those in management) understands and follows the practices of Scrum, and they help lead the organization through the often difficult change required to achieve success with Agile methods. Since Scrum makes visible many impediments and threats to the team's effectiveness, it's important to have a strong ScrumMaster working energetically to help resolve those issues, or the team will find it difficult to succeed. Scrum teams should have someone dedicated full-time to the role of ScrumMaster (often the person who previously played the role of Project Manager), although a smaller team might have a team member play this role (carrying a lighter load of regular work when they do so). Great Scrum Masters have come from all backgrounds and disciplines: Project Management, Engineering, Design, Testing. The ScrumMaster and the Product Owner shouldn't be the same individual; at times, the ScrumMaster may be called upon to push back on the Product Owner (for example, if they try to introduce new deliverables in the middle of a Sprint). And unlike a Project Manager, the ScrumMaster doesn't tell people what to do or assign tasks – they facilitate the process, supporting the team as it organizes and manages itself – so if the Scrum Master was previously in a position managing the team, they will need to significantly evolve their mindset and style of interaction in order for the team to be successful with Scrum (Deemer, Benefield, Larman & Vodde, 2010).

In addition to these three roles, there are other important contributors to the success of the project: Perhaps the most important of these are Managers. While their role evolves in Scrum, they remain critically important – they support the team by respecting the rules and spirit of Scrum, they help remove impediments that the team identifies, and they make their expertise and experience available to the team. In Scrum, these individuals replace the time they previously spent "playing nanny" (assigning tasks, getting status reports, and other forms of micromanagement) with more time "playing teacher" (mentoring, coaching, helping remove obstacles, helping problem-solve, providing creative input, and guiding the skills development of team members). In making this shift, managers may need to evolve their management style; for example, using Socratic questioning to help the team discover the solution to a problem, rather than simply deciding a solution and assigning it to the team.
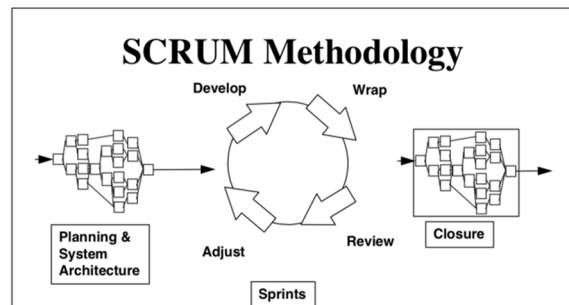

Figure 2: Scrum Method (Schwaber, 1997).

Schwaber (1997) state that Characteristics of SCRUM methodology are:

1. The first and last phases (Planning and Closure) consist of defined processes, where all processes, inputs and outputs are well defined. The knowledge of how to do these processes is explicit. The flow is linear, with some iterations in the planning phase.

2. The Sprint phase is an empirical process. Many of the processes in the sprint phase are unidentified or uncontrolled. It is treated as a black box that requires external controls. Accordingly, controls, including risk management, are put on each iteration of the Sprint phase to avoid chaos while maximizing flexibility.

3. Sprints are nonlinear and flexible. Where available, explicit process knowledge is used; otherwise tacit knowledge and trial and error is used to build process knowledge. Sprints are used to evolve the final product.

4. The project is open to the environment until the Closure phase. The deliverable can be changed at any time during the Planning and Sprint phases of the project. The project remains open to environmental complexity, including competitive, time, quality, and financial pressures, throughout these phases.

5. The deliverable is determined during the project based on the environment.

3 RESEARCH METHOD

This study collected several literature studies on the results of research and reviews on the implementation of Agile Scrum in human resource management. The results of the review are explained using systematic qualitative descriptive methods in the form of agile methods and their application in industries in the current digital era that requires innovation and new ways of working in order become sustainable organizations and able to deal with rapidly changing business competition.

4 DISCUSSION

Digital transformation strategies take on a different perspective and pursue different goals. Coming from a business-centric perspective, they focus on the transformation of products, processes, and organizational aspects owing to new technologies. Their scope is more broadly designed and explicitly includes digital activities at the interface with or fully on the side of customers, such as digital technologies as part of end-user products. This depicts a clear difference to process automation and optimization, since digital transformation strategies go be- yond the process paradigm, and include changes to and implications for products, services, and business models as a whole.

Changes in the business environment that is very fast to make conventional ways of working must be changed with the times. Learning agility is considered as one of the trends in human resource management that can maximize the work of employees, especially millennials.

Figure 3: Conceptual Model of Learning Agility (Lombardo & Eichinger, 2000).

Lombardo and Eichinger (2000) defined learning agility as the willingness and ability to learn new competencies in order to perform under first-time, tough, or different conditions. The formulated a conceptual framework of learning agility consisting of the following four factors (see Figure 1):

1. People agility: the extent to which individuals know themselves well, learn from experience, treat others constructively, and are cool and resilient under the pressures of change.
2. Change agility: the level to which individuals are curious, have passion for ideas, like to experiment with test cases, and engage in skill-building activities.
3. Results agility: the extent to which individuals get results under tough conditions, inspire others to perform beyond normal, and exhibit the sort of presence that builds confidence in others.
4. Mental agility: the degree to which individuals think through problems from a fresh point of view and are comfortable with complexity, ambiguity, and explaining their thinking to others.

Since the time Lombardo and Eichinger (2000) proposed the construct of learning agility as a possible indicator of high-potential talent, it has transformed into a pervasive leadership tool. Many organizations today assess learning agility when making decisions about whom to hire for leadership positions, whom to promote, whom to designate for global assignments, and whom to place into emerging-leaders or high-potential programs. In addition, fundamental to leadership-development efforts is an individual's capability to deal with complexity, ambiguity, novelty, diversity, and adversity (Hooijberg, Hunt, & Dodge, 1997). Scores on the various facets of learning agility provide diagnostic guidance on areas that need particular developmental attention (De Meuse, 2017).

Hastie (2004) discusses how Agile differs from traditional methods by putting much more emphasis on team work, cooperation and self organisation. One of the key to the success of Agile is trust, which needs to be present both between the leader and the team and among the team members themselves. "AGILE like many methods look great on paper but fail to work in reality because they forget the human factor. Any paradigm, which has human interaction at its heart, will fail if human psychology is not understood and taken into account. The key aspects of human nature which IT development/project management methods have to take into account are no different to those at the heart of most modern

economic theories", (Brady, 2006): People will always put their own interests ahead of the interests of the group, People are self-interested, Commercial production decisions are based on rational expectations, Karl Popper's "First law of collective action". You can never get more than 5 people to agree on anything."

Management of human resources using Scrum work methods in order to achieve Agile work behavior is a challenge for the change in work mindset that must be done to face business competition in the digital age that demands precise and appropriate work methods. The advantages of agile project management and particularly the Scrum-based approach is its simplicity. Within an agile project, roles are clearly defined and do not cross boundaries. Features can be completely developed and tested in short iteration cycles. Because each team members bears major responsibility for their part of the project, ownership of the project is more broadly based. The methods of agile project management enforce extensive communication, which helps teams organize more effectively. This, ultimately, can lead to greater productivity for everyone involved.

5 CONCLUSION

Agile work methods using Scrum processes are not new to IT Development or the field of project management. Because the need for work that is right on target and quality makes other fields of work also use the Scrum method. The implementation of Agile - Scrum Process in the digital era is now an urgent, highly dynamic external environment urging organizations to be able to keep up with changes in the external environment and meet various market demands.

The application of the Scrum method in organizations requires commitment from the leadership and the working group that runs it. The sprints method in Scrum requires the team to always review, adjust, develop and wrap. This cycle will continue to be carried out to produce a product by following the expected targets. But in its implementation, organizations must be able to grow and implement learning agility before running the Scrum method set. Learning agility is formed from mental agility, people agility, change agility, results agility.

Based on this explanation, it can be concluded that building the agility work patterns of the most important elements is not only the methods applied

but the readiness of the human resources that will carry out the agile patterns, as well as the ability of human resources to change mindsets and work patterns that use the old ways no longer in accordance with the demands of an industry that has changed rapidly and is very dynamic.

REFERENCES

Brady, K., 2006. AGILE/SCRUM Fails to get to grips with Human Psychology. [Online]. Available: http://www.claretyconsulting.com/it/comments/Agile-Scrum-fails-to-get-to-grips-with-human-psychology/2006-08-17/. [Accessed: 3rd August 2011]

Bustamante, B. A., & Sawhney, R. (2011). Agile XXL: Scaling Agile for Project Teams.

Cervone, H. F. (2011). Understanding agile project management methods using Scrum. *OCLC Systems & Services: International digital library perspectives*, *27*(1), 18-22.

Cockburn, A., 2007. Agile Software Development: The Cooperative Game. Addison-Wesley.

Deemer, P., Benefield, G., Larman, C., & Vodde, B. (2010). The scrum primer. *Scrum Primer is an in-depth introduction to the theory and practice of Scrum, albeit primarily from a software development perspective, available at: http://assets.scrumtraininginstitute. com/downloads/1/scrumprimer121. pdf, 1285931497*, 15.

DeGrace, P. and Stahl, L. (1993) *The Olduvai Imperative: CASE and the State of Software Engineering Practice*, Yourdon Press, Prentice Hall, Englewood Cliffs, New Jersey

De Meuse, K. P. (2017). Learning agility: Its evolution as a psychological construct and its empirical relationship to leader success. *Consulting Psychology Journal: Practice and Research*, *69*(4), 267.

Dingsøyr, T., Nerur, S., Balijepally, V., & Moe, N. B. (2012). A decade of agile methodologies: Towards explaining agile software development.

Erickson, J., Lyytinen, K., Siau, K., 2005. Agile modeling, agile software development, and extreme programming. Journal of Database Management 16, 88–100.

Fowler, M., & Highsmith, J. (2001). The agile manifesto. *Software Development*, *9*(8), 28-35.

Hastie, S., 2004. The Agile Mindset: what does it take to make this stuff work? Software Education Associates Ltd, Agile Development Conference Wellington & Sydney, September 2004.

Henderson-Sellers, B., Serour, M.K., 2005. Creating a dual-agility method: the value of method engineering. Journal of Database Management 16, 1–23.

Hooijberg, R., Hunt, J. G., & Dodge, G. E. (1997). Leadership complexity and development of the leaderplex model. *Journal of Management, 23,* 375–408. http://dx.doi.org/10.1177/014920639702300305

Lalsing, V., Kishnah, S., & Pudaruth, S. (2012). People factors in agile software development and project management. *International Journal of Software Engineering & Applications*, *3*(1), 117.

Lencioni, P. M. (2016). *The ideal team player: How to recognize and cultivate the three essential virtues*. John Wiley & Sons.

Lombardo, M. M., & Eichinger, R. W. (2000). High potentials as high learners. *Human Resource Management, 39,* 321–329.

Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, *57*(5), 339-343.

Moe, N. B., Dingsøyr, T., & Dybå, T. (2010). A teamwork model for understanding an agile team: A case study of a Scrum project. *Information and Software Technology*, *52*, 480-491.

Schwaber, K. (1997). Scrum development process. In *Business object design and implementation* (pp. 117-134). Springer, London.

Tuckman, B. W., & Jensen, M. A. C. (1977). Stages of small-group development revisited. *Group & Organization Studies*, *2*(4), 419-427.

Williams, L., Cockburn, A., 2003. Agile software development: it's about feedback and change. Computer 36, 39–43.