Startup Learning Path (SLP): A Learning Model for Startup Employees Using Agile Learning Approach

Egi Endeska Putra*, Ridi Ferdiana, Rudy Hartanto
Dept. Electrical Engineering and Information Technology, Universitas Gadjah Mada, Yogyakarta, Indonesia
*egi.endeska.p@mail.ugm.ac.id

Abstract—The growth rate of startup numbers in Indonesia is very high due to the increase of people interest in the technology utilization, particularly Smartphone. However, more than 75% startup that has been increasing has experienced the failure. This is related to many factors, one of which is the lack of qualified Human Resources. This research aims to propose a learning model called Startup Learning Path (SLP), designed using agile methodology approach to be an alternative that can be used by startup to increase the quality of the employees’ competence in supporting the startup to realize the vision and mission.

1. Introduction
Startup refers to a company that has just been established and is in the phase of development and research in finding the accurate market. Based on the number of startups, Indonesia today is in the fifth rank in the world with the total of 2,040 startups [1]. This number will be increasing along with the increase of the people interest in using the technology of smartphone. However, more than 75% startup that has been developing are failed in their development. [2]. As shown in previous research, there are 10 factors of leading the startup to the failure [3]:
1. Low trust between founder and the employees
2. Highly dynamic market and technology trend
3. Low Profitability
4. Policy on the method and salary level of employees.
5. Unmeasured level for customer’s satisfaction
6. Low level of human resource competence
7. Uncontrolled growth rate
8. The absence of measurement for the organization performance
9. The rigid communication and collaboration method
10. Emotional determination of product price

From the results of the research, it can be concluded that one of the factors for the failure in the startup development is related to the low level of competence of human resources (employees) that find it difficult to follow the so rapid technology development. Meanwhile, competence is one of the determining factors that the need for knowledge and skill increases as it becomes the key of the company success [4] [5]. The company is not able to compete if the employees have no competitiveness [6].
To cope with this, one of the activities that can be done is by socialization. The socialization activity can be done through training, workshop or seminar [7]. A number of benefits from the workshop include [8] [9]:
1. The improvement of employees’ competence
2. Broadening the insight and knowledge
3. Minimizing the knowledge gap
4. Developing the cooperation among employees
5. Improving the work productivity

However, this socialization activity has a number of constraints [7]:
1. Requiring a quite long time to adopt knowledge
2. Workshop limited by time
3. Costly training
4. The manual unread by the participants
5. Hard to schedule the workshop

Furthermore, to validate the problem, an initial research to the 10 developing startups in Indonesia has been done. The result showed that 9 of 10 startups did not give any forms from the socialization activity to the employees – particularly from the training. The more complete results can be seen in Table 1.

| Startup | Operational Field                         | Availability | Reason                                |
|---------|------------------------------------------|--------------|---------------------------------------|
| HS      | Digital Library System & Point of Sales  | Not available| Costs are too high                    |
| KS      | Software House                           | Not available| Costs are too high                    |
| BT      | Cosmetic Application Platform            | Not available| Costs are too high                    |
| MB      | Ticket booking ferry                     | Available    | To solve the problems being faced by the company |
| OT      | Online Payment                           | Not available| Not available leisure time for employees |
| GG      | Software house                           | Not available| Costs are too high                    |
| IS      | Software house                           | Not available| Costs are too high                    |
| WI      | One stop tourism application             | Not available| Costs are too high                    |
| DK      | Hospitality promotion & booking application| Not available| Costs are too high                    |
| BC      | Custom goods marketplace                 | Not available| Costs are too high                    |

From the Table 1, it can be concluded that the startup did not give any training to the employees and this then has risen a number of problems:
1. The low quality of startup among the employees in relation to the absence of training activity for the career development.
2. The increasing probability of startup to experience a failure in its development.

Based on the problem, then a number of research questions to be discussed in this research have been made.
1. What is the learning model that can be used by the limited resource startup company to improve the employee’s skills?
2. Can the learning model be used by the startup to follow the very dynamic technology development?

The aim of this research is to propose a learning model with the Agile Learning Design approach that can be used by the startup that has a limited resource. The Agile Learning Design refers to the content development focused on the learning acceleration, content flexibilities and collaboration among the training participants [10]. The learning model proposed is called as Startup Learning Path (SLP).

2. Previous Research
Training is quite common in the work world in companies, organizations, institution or even in any educational instances. It is crucial for the employees to more master and be better at work given or to be given in the next time. Ridi Ferdiana [7] conducted a research in 2012 on the development of e-learning model using the agile method called as AGLEMO. AGLEMO was designed to adopt the dynamic IT learning with the personal audience target. It was proven to have a better performance in providing a personal learning.

In the same year, Ridi Ferdiana then developed a learning model for ICT based on the model developed by Carliner, instructions design model (IDM). The model was called as ICT-IDM with the organization as the audience target. The development of this model was based upon an argument that the e-learning implementation in an organization is different from the one in universities or among academics. ICT-IDM was proven to be able to make a learning adoption process 27% faster than the conventional learning model.

Furthermore, Maurício, et al. in 2016 developed a learning model called as AM-OER based on the agile concept in the software development and then compared to AD-HOC method. The target of this research was the students (university). The results showed that the AM-OER model was more efficient compared to the AD-HOC method.

This research was developed based upon the aforementioned researches in which the previous research has never targeted its audience of startup in which in the initial research it was proven that time and resource became their core constraints in conducting a training activity.

3. Research Method
This research was conducted by adopting the agile approach. Agile learning is a learning model applying the agile concept/principle of software development lifecycle. The agile approach consisted of four phases [7]:

A. **Exploration Phase.** It was conducted by collecting some practical data related to the training and development of the employees' profession. Furthermore, the practical data were filtered based upon the target in this research.

B. **Planning Phase.** It was conducted through a direct research to the research target to collect the data of the training form as expected by the startup.

C. **Iteration Phase.** It was conducted by testing the model design proposed using some case studies relevant with the adoption of learning model.

D. **Production Phase.** It was conducted by discussing the results of the evaluation.

The description of the four stages of the process can be seen in Fig. 1.
4. Result

A. Exploration Phase

In this exploration phase, the researcher did a research to the companies that have been stable to analyze the training form given to their employees. The main indicators sought in this research included:

1. Purpose of training
2. Training instructor
3. Training participants
4. Training method

This research was conducted in six stable companies. Some findings obtained in this research included:

1. Training became one of company strategies.
2. Training was held with the aims of problem solving and professional development for the employees.
3. For the on the job training, the most used concepts were coaching & job instruction training.
4. For the off the job training, the most used concepts were the case study and audio visual.
5. Training was held weekly with the training participants selected based on the needs of the training. Each training session was held within 1 to 4 hours.
6. For the new employees, the training given was technical training with a coaching method.
7. Some goals of the training could be reached.
8. The constraint mostly found in the training process was related to the lack of employees’ interest.
9. Meanwhile, the most widely complaint about the training was about the unplanned training session.
10. Time required to apply the results of the training was less than 1 month. Meanwhile, time to evaluate the training was after 1 month.

B. Planning Phase

In this phase, a number of training concepts along with their contents based upon the findings in the first phase were designed. It was purposely to create a suitable training path to be adaptable for startup. The design (plan) can be seen in Table 2.
Table 2. The Design of Learning Plan

| Indicator       | Alpha                     | Beta                       | Charlie                  | Delta                     |
|-----------------|---------------------------|----------------------------|--------------------------|---------------------------|
| Goals           | Problem solving/Professional development | Professional development | Problem solving/Professional development | Professional development |
| Type            | On the job training       | Off the job training       | On the job training      | off the job training      |
| Method          | Coaching                  | Audio-visual               | Job Instruction Training | Case Study               |
| Implementation Time | Every week               | Every week                 | Every week               | Every week               |
| Duration        | 1 – 4 hours               | 1 – 4 hours                | 1 – 4 hours              | 1 – 4 hours              |
| Participants    | Based on the needs       | Based on the needs        | Based on the needs       | Based on the needs       |
| Instructor      | External resource         | External resource          | Internal Resource        | Internal Resource        |
| Reward          | Certificate               | Certificate                | Salary increases         | Salary increases         |

Furthermore, based upon the plan design that has been resulted in Table 2, a design of learning path was then created to be tested in further process. The design of learning path is presented in Fig. 2.

Figure 2. Learning Path Design

From several training models produced, some of them use external resources as instructors. However, based on the background of the problem discussed in the background of the problem, which is the startup does not have enough resources to bring in the instructor. Because of this problem, the plan design that using external resources will be using the online training platform as a substitute for the
instructors. The researcher has conducted a research on some platforms of online training in accordance with the indicators needed in line with the plan design and background problem, which is:
1. It can be used for both professional development and problem solving that being faced by a startup
2. It must be available for both training type, which are on the job training & off the job training.
3. The application must be free of charge to use, because from the background problems, startup have limited resources.
4. The system must provide a learning outcome, which in this plan is certificate.

Based on criteria above, there are 3 platforms of available suitable online training.

a. ALISON
ALISON is a free online education platform that mostly focuses on workplace-based skills. It was founded in Galway, Ireland by Irish social entrepreneur Mike Feerick on 21 April 2007. [13]
b. FutureLearn
FutureLearn is a digital education platform founded in December 2012. It is a Massive Open Online Course (MOOC) learning platform, and as of May 2018 included 143 UK and international partners, including non-university partners. [14]
c. OpenLearning
OpenLearning is a for-profit educational technology institution based in Australia that offers a social online learning platform that can deliver massive open online courses (MOOCs). [15]

The comparison of features from those three platforms can be seen in Table 3.

| Feature            | ALISON                                      | Future Learn                               | Open learning                             |
|--------------------|---------------------------------------------|--------------------------------------------|-------------------------------------------|
| Platform           | Web & Mobile Application                     | Web & Mobile Application                   | Web                                       |
| Pricing            | Free and Paid                                | Free and Paid                              | Free and Paid                             |
| Discussion         | There is a discussion feature                | There is a discussion feature              | There is a discussion feature             |
| Resources          | The material used in each sub module of the training can be downloaded | The material used in each sub module of the training can be downloaded | The material used in each sub module of the training can be downloaded |
| Download           |                                              | Participants can see the training progress | Participants can see the training progress |
| Tracking           |                                              | There is an assessment to test the level of participants' understanding of the training material | Not available |
| Assessment         |                                              |                                             |                                           |
| Certification      | There is a certificate but must be paid before it can be taken | Trainees can get a complete certificate for free | There is a certificate but must be paid before it can be taken |

C. Iteration Phase

In the iteration phase, the plan that has been designed in the designing phase was tested to the startup of DK and BC. DK startup refers to a company engaged in the boarding room booking throughout Indonesia; while, BC startup is a marketplace to produce the custom stuffs. Here, Table 4 presents the more detailed data.

| Startup | Operational Field                  | Platform          | Technology Used                             | Number of Employee |
|---------|-----------------------------------|-------------------|---------------------------------------------|--------------------|
| DK      | Hospitality promotion & booking application | Web & Mobile Apps | PHP Laravel, React Native, Mysql, Ubuntu Server | 4                  |
Subsequently, all plans that have been designed were tested to both two startups with a purpose to result in the most accurate learning path. The result of the test is presented in Table 5.

| Startu p | Plan | Goal | Type | Method | Implementation Time | Duration | Participant | Instructure | Rewards |
|----------|------|------|------|--------|---------------------|----------|-------------|------------|---------|
| DK       | Alpha| PASS | PASS | PASS   | PASS                | PASS     | PASS        | PASS        | PASS    |
|          | Beta | PASS | PASS | PASS   | PASS                | PASS     | PASS        | PASS        | PASS    |
|          | Charlie | PASS | PASS | PASS   | PASS                | PASS     | PASS        | FAIL        | FAIL    |
|          | Delta | PASS | PASS | PASS   | PASS                | PASS     | PASS        | FAIL        | FAIL    |
| BC       | Alpha| PASS | PASS | PASS   | PASS                | PASS     | PASS        | PASS        | PASS    |
|          | Beta | PASS | PASS | PASS   | PASS                | PASS     | PASS        | PASS        | PASS    |
|          | Charlie | PASS | PASS | PASS   | PASS                | PASS     | PASS        | FAIL        | FAIL    |
|          | Delta | PASS | PASS | PASS   | PASS                | PASS     | PASS        | FAIL        | FAIL    |

As shown in Table 5, it is found that Plan Charlie and Delta were not applicable due to some training indicators unfulfilled (FAIL): Instructure and reward.

a. On Plan Charlie, the proposed method used is Job Instruction Training with using internal resources (existing employee) as the instructor. However, the existing internal resource of both startup DK & BC could not be the trainer because of lack of experience.

b. On Plan Delta, the proposed method used is Case study with using internal resources (existing employee) as the instructor. However, the same problem occurs, which is the existing employee could not lead the team as instructor because of lack of experience.

c. Because the main indicator could not have implemented in the plan Charlie & Delta, the rewards indicator is also could not implemented, thus made it unfulfilled (FAIL).

Furthermore, all indicator from the plan Alpha and Beta are successfully filled (PASS). From this finding it safe to say that plan Alpha and Beta can be used as learning path for professional development model.

D. Production Phase

From on the result of the test in previous phase, then the startup learning path (SLP) resulted can be seen in Fig. 3.
Based on the Fig. 3, it can result in the training curriculum that can be used by the startup:

a. The aim of the learning model was to cope with any existing internal problems in the company or to improve the employees’ competence in order to be able to cope with any tasks given by the company.

b. The types of training that could be used included on the job training and off the job training.

c. In the on the job training, the method that could be used was coaching by using an online training platform as its resource.

d. In the off the job training, the method that could be used was the audio-visual using the online training platform as its resource.

e. The training was conducted weekly with the duration of 1 to 4 hours. The training participants could be selected based upon the company needs.

f. The trainer or instructor used the online platform in which the training participants and instructor also could make an indirect communication using the chatting feature. Reward obtained once completing the training was completion certificate.

5. Results and Future Works

In this research, it has been proposed a professional development model namely Startup Learning Path (SLP). It was designed for the developing startup. SLP was developed using the agile approach in the process of software development.

SLP was a learning path focused on problem solving and professional development of startup employees. SLP could be used either on the job training or on off the job training. Furthermore, SLP has main feature such as:

1. Cost friendly. SLP is designed so startup with limited resource can provide a professional development program so the employee can keep up with very dynamic technological developments.
2. Flexible time to learn. SLP uses online training application that can be accessed for free so startup employees can learn using more flexible time
3. Tracking system, where trainees can see the progress of the progress of the training being carried out
4. Reward system. After the participants complete a training, participants will get a certificate as a reward.

SLP have several things that can be improved in order to maximize the quality of learning model that can be used by startups. There are some points further research can do based upon this research:
1. This research needs a form of evaluation to measure the effectiveness level from SLP.
2. SLP requires a further implementation for the startup that has the employees working by remote (geographically separated).

References
[1] S. Rangking, "Countries," [Online]. Available: https://www.startupranking.com/countries. [Accessed 17 2 2019].
[2] S. Ghosh, "Venture Capital Secret: 3 Out of 4 Start-Ups Fail," The Wall Street Journal, 2012.
[3] Z. Afdi and B. Purwanggono2, "Perancangan Strategi Berbasis Metodologi Lean Startup Untuk Mendorong Pertumbuhan Perusahaan Rintisan Berbasis Teknologi Di Indonesia," Industrial Engineering Online Journal, 2018.
[4] S. Karnouskos, "Massive open online courses (MOOCs) as an enabler for competent employees and innovation in industry," Computers in Industry, vol. 91, pp. 1-10, 2017.
[5] N. J. Navimipour and B. Zareie, "A model for assessing the impact of e-learning systems on employees' satisfaction," Computers in Human Behavior, vol. 53, pp. 475-485, 2015.
[6] B. Zareie and N. J. Navimipour, "The effect of electronic learning systems on the employee's commitment," The International Journal of Management Education, vol. 14, pp. 167-175, 2016.
[7] R. Ferdiana and O. Hoseanto, "Agile Learning Model for ICT Self-Paced E-Learning in Heterogenic Users Environment," 2012.
[8] I. Varkonyi, "E-learning - Online Education and Professional Development," Defence Transportation Journal, pp. 27-30, 2017.
[9] H. Kimiloglu, M. Ozturan and B. Kutlu, "Perceptions about and attitude toward the usage of e-learning in corporate training," Computers in Human Behavior, vol. 72, p. 339e349, 2017.
[10] M. M. Arimoto, E. F. Barbosa and L. Barroca, "An Agile Learning Design Method for Open Educational Resources," in IEEE Frontiers in Education Conference (FIE), El Paso, TX, USA, 2015.
[11] R. Ferdiana and O. Hoseanto, "Instruction Design Model for Self-Paced ICT System E-Learning in an Organization," (IJACSA) International Journal of Advanced Computer Science and Applications, vol. 3, no. 8, pp. 1-7, 2012.
[12] M. Rachman, M. A. Munandar and A. Suhardiyanto, "Pengembangan Model Manajemen Pelatihan Dan Pengembangan Pendidikan Karakter Berlokus Papedokan Karakter," Jurnal Refleksi Edukatika, vol. 8, pp. 17-26, 2017.
[13] Wikipedia, "Alison," [Online]. Available: https://en.wikipedia.org/wiki/Alison_(company). [Accessed 17 2 2019].
[14] Wikipedia, "FutureLearn," [Online]. Available: https://en.wikipedia.org/wiki/FutureLearn. [Accessed 17 2 2019].
[15] Wikipedia, "OpenLearning," [Online]. Available: https://en.wikipedia.org/wiki/OpenLearning. [Accessed 17 2 2019].