

Development Factors of Small Medium Software-Enterprises

R B Rinawan, M Sa'adah, AP Wibawa

Pendidikan Kejuruan, Universitas Negeri Malang, Malang,
Indonesia

E Nugraha

Ilmu Komputer, Universitas Pendidikan Indonesia,
Bandung, Indonesia

Abstract—The development of small medium software enterprises accompanied by various factors. These factors will be structured as a strategic plan for the company's progress. This paper will discuss identification of the factors of development of small medium software enterprises. The research was done by analytic approach and data retrieval was conducted through online questionnaire. Three stages in this research are finding the strengths and weaknesses of business, analyzing facts and building hypotheses based on business concepts and principles. There are eight main factors namely Development of governance and management standards in Software House, software house management manifest, development of IT values to support software house, increasing human resources to develop software house, scope / field software house, software house services, software security house, software house evaluation. The results showed 4 dominant factors becoming consideration of the company.

Keywords—*Digital services enterprise; development factor; software house.*

I. INTRODUCTION

None of companies including small and medium enterprises (SME) can avoid the information revolution [1]. SME must understand the conditions of market competition and their critical success factors [2] that ensure successful competitive performance for the company [3] and can help reduce the risk of failure and increase their chances of success in business [4]. They will survive if they can consider the factors that affect their business, especially for SME in information technology (IT) like software house. Because of globalization, technological acceleration, change and innovation create threats, so companies must become more responsive to transformation to survive [5] and they must adapt quickly to new circumstances [6].

Small and medium software-enterprises should attract public interest with the maximum to use the services of software house companies around them. Thus, a strategic plan is needed to build a well-known small and medium software-enterprises. In an effort to be able to grow rapidly, there will be many obstacles encountered so that needed solutions to solve the problem. Based on this, it is necessary to identify and survey to determine the key factors for the development of small and medium software-enterprise.

II. METHOD

This study discusses the identification of the development factors of small and medium software enterprises. The method used in this research is the analytical approach. Data collection done through an online questionnaire given to software house respondents. The importance of this study determines several useful factors, effective, and key in achieving the success of home software. This research will be conducted three stages, as follows researchers describe business processes in small and medium software companies as learning materials to find strengths and weaknesses in business, researchers analyzed the facts that occurred in the field significantly and researchers build hypotheses based on business concepts and principles according to what happen in the field.

Questionnaires used refer to the journal "Summary of strategic and tactical objectives for IT at UIB (2011-2014) and an example of the alignment [7]. Questionnaire were administered to the respondents related to the factors that determine the development of small and medium software enterprises. The questionnaire has eight main points namely Development of governance and management standards in Software House, Software House management manifest, Development of IT values to support Software House, Increasing human resources to develop Software House, Scope/field Software House, Software House Services, Software Security House, and Software House Evaluation. The results of data analysis of the eight main points can be declared feasible and valid or influential as a development factors of small and medium software-enterprises if the average value of at least 65%.

III. RESULTS AND DISCUSSION

The software industry of micro, small to medium, and large enterprises, has their respective views on the factors that contribute to the success or failure of the software company [5]. The software will always experience revolution and renewal according to the needs of users and the development of the era. Based on observations that have been done, can be analyzed into several main points, namely:

A. The development of management standards in Software House

TABLE I. THE DEVELOPMENT OF MANAGEMENT STANDARDS IN SOFTWARE HOUSE

No.	Point A: The development of management standards in Software House	Answer options	
		Yes (%)	No (%)
1.	Reports of progress or improvement	88.89	11.11
2.	Standards-based management of IT	77.78	22.22
3.	Communication between employees	100.00	0,00
4.	Update in the management of IT devices	77.78	22.22
Average		86.11	13.89

Development of management standards will make software house can grow and achieve goals with the maximum. Management is a different process consisting of planning, organizing, actuating, and controlling to achieve the objectives determined by using human and other resources [8]. Communication between employees receives more attention on this aspect. The data indicate that communication can improve collaboration and team performance with good. They communicate in a transparent manner with all colleagues. There is a positive effect with the communication, that they can share each other about the prospect of the company and create new ideas. Communication formed the company by creating a teamwork of the various divisions, to enable the effectiveness in the execution of a project. Employee involvement in firms has higher employee retention as a result of turnover and reduces their intention to leave the company, productivity, profitability, growth, and customer satisfaction [9]. The company has always made a report on the progress achieved within a certain period, such as daily, weekly, and monthly. The report describes the work done by time scheduling, measures to solve the problem, a big effort in comparison with the results achieved in the form of nominal and target / resolution to be achieved. The IT-based management standards used in each company are different, some use kanban techniques with the help of BPM systems created by the company to monitor team operations, task management, online payslip. They also always update or modernize IT (Information Technology) to improve performance and software features. Management in the company has a very important role in the successful improvement of the software process. High management (including company owners, directors and senior managers) must have direct involvement to ensure continuous and consistent improvement of the software process so that company progress can be monitored [15].

B. Being management Software House

TABLE II. BEING MANAGEMENT SOFTWARE HOUSE

No.	Point B: Being management Software House	Answer options	
		Yes (%)	No (%)
1.	Update IT equipment	77.78	22.22
2.	Special space development	44.44	55.56
3.	The special team cooperation and promotion	77.78	22.22
4.	The company facilitates employee	77.78	22.22
5.	Special services to communicate	44.44	55.56
Average		64.44	35.56

Respondents stated that the company has used the form of IT equipment management (Information Technology). But there are companies that have not done an update of IT

equipment to the latest technology because they have to weigh the positives and negatives of these technologies. The success of the adoption and use of information systems and information technology (IS / IT) in manufacturing small and medium-sized enterprises (SMEs) can have an impact in the form of long-term success that is within the internal context of the organization, which is based on the competence of the organization [10]. At the company there is a special team / division that handles cooperation with other parties to promote the software house. In some software houses, only four companies that have a service or special applications to enable customers to communicate with the developers.

C. The development of the values of IT to support the software house

Table 3: The development of the values of IT to support the software house

No.	Point C: The development of the values of IT to support the Software House	Answer options	
		Yes (%)	No (%)
1.	Web companies as sale	77.78	22.22
2.	Differences customer interest with web promotion	66.67	33.33
3.	Innovation	55.56	44.44
4.	Updates service	100.00	0,00
5.	Development and creation of software	22.22	77.78
6.	adequate facilities	77.78	22.22
7.	Software builder	44.44	55.56
Average		63.49	36.51

Development of IT values in the software house can improve the quality of the software house. Respondents stated that they are very active in the promotion, through the website, the offer via email (cold emailing), social media (Facebook, Twitter, Instagram), the site of the marketplace and portfolios (upwork, Dribbble, Behance). Promotions can significantly increase customer interest. Customer interest is increasing due to innovations from developers or software makers. So that these innovations can be implemented, the company constantly updates to its services. To strengthen small and medium software companies, efficient Software Engineering practices are required according to their business type. Over the last two decades, software engineering community has expressed a particular interest for the improvement of software processes in an effort to improve the quality of software products, as software development productivity [11]. The quality of products and services in a business can increase because of the continual improvement of the software process and the ability to develop it from time to time, which it has an impact on customer satisfaction [16].

D. Increased human resources to develop software house

Table 4: Increased HR to develop a Software House

No.	Point D: Increased HR to develop a Software House	Answer options	
		Yes (%)	No (%)
1.	Employee training	77.78	22.22
2.	Upgrade employee capability	100.00	0,00
3.	Special applications on the latest information	33.33	66.67
4.	standard application	66.67	33.33
Average		69.44	30.56

Companies definitely need good and competent human resources. Aspects of the main concern related to human resources according to the respondent are always upgrading

the ability of the employees. Upgrading the ability of employees can be done by providing special training either before or during work in the software house. Employee engagement is a major construction that touches almost all aspects of human resource management and is a stronger predictor of positive organizational performance [9]. To improve the capabilities and innovation of the software house, employees should access certain applications, such as email newsletters, design & development blogs. In addition to provide training, the company also established good relationships among employees in the form of communication, so it can create human resources that respect each other and work together. The presence of managers in the company should improve two-way communication, ensuring employees have all the resources they need to do their work, providing appropriate training to increase their knowledge and skills, build reward mechanisms where good jobs are rewarded through various financial and non-incentives -finance, builds a distinctive corporate culture that encourages hard work and makes life story success, develops a robust performance management system that holds managers and employees [9].

E. Scope /field software house

Table 5: Scope /field software house

No.	Point E: Scope / Field Software House	Answer options	
		Yes (%)	No (%)
1.	Specific targets	44.44	55.56
2.	Constraints on that particular goal	55.56	44.44
3.	Contributions to government	55.56	44.44
4.	Contributions to the university (where the study)	55.56	44.44
Average		52.78	47.22

Scope or field of software house does not have a special concern by respondents from various companies. Software house not only focuses on the scope or specific goal but rather on all fields that need it. Some software houses contribute to the government, but still on a small scale. While the contribution on the University is also still rare because only in the provision of workshops, receiving students who do training or internship in the software house. According to those constraints encountered in the scope of the software needs are changing, the value of service projects tend to be less valued in Indonesia so that the value is small. School and company cooperation will have an impact on students. Students will feel real work and know the work competencies that must be possessed [17].

F. Services software house

Table 6: Services software house

No.	Points F: Services Software House	Answer options	
		Yes (%)	No (%)
1.	Promotions increase sales	77.78	22.22
2.	Satisfied with the achievement	22.22	77.78
3.	Able to compete with other companies	88.89	11.11
4.	Complaints from customers	100.00	0,00
Average		72.22	27.78

Good service to customers should be prioritized by the software house. Efforts to increase the service is carried out

through the promotion and provide maximum quality and the best for the software produced/created. Aspects that receive special attention related to service according to respondents are complaints from customers. Surely every company has ever got a complaint from its customers. When receiving a complaint, the company especially developers are always open to improvement and provide a positive response to then seek the right solution. Usually, the solution taken to solve it is by referring to Standard Operating Procedures of Services that have been established by each software house. The virtue of good service makes the software house trustworthy by its customers and makes it able to compete in the market. As market competition becomes more intense, it has to build a customer relationship management system to win new customers, develop services and products for customer satisfaction and retain existing customers [12].

G. Security software house

Table 7: Security software house

No.	Point G: Security Software House	Answer options	
		Yes (%)	No (%)
1.	Security risk	66.67	33.33
2.	Guidelines for the management of security	44.44	55.56
3.	Control software and hardware	77.78	22.22
4.	modification of security	66.67	33.33
Average		63.89	36.11

Software and hardware controls have the greatest intensity of answers. Various opinions appeared from the surveyors. Controls do periodically to determine the gaps. Even companies have specialized employees who handle software and hardware controls. But there are companies that control in accordance with the demand from customers. The achievement of a balanced ecosystem is derived from high efficiency in hardware and software usage [13]. Then the advanced company will control to achieve that efficiency. Because with this will provide a sense of security and comfort for customers and the level of customer satisfaction increased.

H. Evaluation software house

Table 8. Evaluation Software House

No.	Points H: Evaluation Software House	Answer options	
		Yes (%)	No (%)
1.	Achievement on target	66.67	33.33
2.	Substitution employee positions	77.78	22.22
3.	Performance evaluation	100.00	0,00
4.	additional staff	55.56	44.44
5.	Solutions customer complaints	44.44	55.56
6.	Service after ordering	66.67	33.33
7.	innovation plans	44.44	55.56
Average		65.08	34.92

Performance evaluation gets more attention on this aspect. All respondents stated to do performance evaluation. Companies evaluate their needs. There are companies that do evaluation once a week, once a month and even every finish product. It functions for decision making and planning to follow new trends [14]. New trends will determine whether the company is able to survive with renewal or not. With performance evaluation, the company will get data about the product, finance, employee performance and so forth. The

company will be easy to determine the way forward for the better.

Development factors of small and medium software-enterprise are grouped into eight main points. In each point there are aspects / criteria of each. Of the eight main points, there are four important points that get a percentage above 65% and declared to be the key to success to grow the business to reach the peak of success in the software house, which is the development point of management standards in Software House, human resource development to develop Software House, House, and Software House evaluation.

IV. CONCLUSIONS

The most significant factors affecting the success of small and medium enterprise-enterprises are different, ranging from small and medium enterprises (SME) characteristics, customers and markets, ways of doing business and cooperation, and resources and finances. Most of the small and medium software-enterprises based on our research show that there are four points that are the main concern of the company such as the point of development of management standards in Software House that is on this aspect communication among employees recognized by the company can improve cooperation and team performance with well, and they can share each other about the prospect of the company and create new ideas. The point of increasing human resources to develop Software House is that on this aspect, upgrading the ability of employees recognized by the company can create qualified and competent employees according to current demands. Because employees are one of the most important parts for a company to be successful. Point of service Software House that is on this aspect complaints from customers recognized by the company to make the company or developer to be open with the criticism and suggestions provided by the customer. The company always receives complaints well and find the best solution. Software House evaluation points are on this aspect performance evaluation is recognized by the company is very important. With performance evaluation that has been achieved, the company can learn from the experience of what has been achieved and make them to continue to improve its quality. Therefore, small and medium software enterprises should ensure that management standards are well implemented in the company, especially communication between employees, so that good cooperation is established to realize the company's success. Personnel who have good communication indicate that they are superior and competing human resources, so it will be positive for customer service. Communication, HR, and services contribute positively to develop reputation and enhance the company's strategic position so that it can enter the

international market. In addition, the evaluation of the achievement and performance of employees must also be considered in order to always have new knowledge and skills and can cope with rapid technological changes well.

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