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### FINDING REVOLUTIONARY ROAD TO INDUSTRY 4.0 FOR WOMEN'S SMALL-SCALE BUSINESS

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#### **ABSTRACT**

This research tried to find factors that hindered the effort of women from Gunung Halu Village, West Bandung Distric, West Java, Indonesia, to do small-scale business. This is an exploratory type of study with questionnaire and interview method for collecting data. Focus of this research is from the accounting point of view. The findings showed the minimum of basic knowledge in simple financial management as presumed before. However, instead of trying to solve problems with traditional approach, this research try to leap to the most modern tool to empower them in escalating their business capability, which is the the Internet of Things (IoT). This study should provide the West Bandung District with necessary steps to take practical programs involving high technology. It should be able to support the business women at Gunung Halu villages to reach for the era of Industry 4.0 Revolution through big bang implementation.

#### **INTRODUCTION**

With the pressure of economic nowadays, it is common that women, especially housewives, help the family to earn additional income. That is also the situation for women in some villages at Gunung Halu, West Bandung District, West Java, Indonesia. They have to earn extra money either because the husband's earnings is not enough to support the family or because they are the backbones of the family. Most of them once worked as woman labor in some

Arab region countries. For some reasons they do not want to go back there. Then, with some savings they have, they are trying to build a small-scale family business.

Due to the limited land they have and the quite barren condition, most of them could not engage in agriculture business. Instead they do miscellaneous small-scale family businesses such as opening food stalls, producing snacks or cookies, tailor services, producing art and craft products, mostly culinary business, although there is farming, too. Overall, they are in the very beginning stage of doing their small-scale family business.

To encourage the business atmosphere in those villages, the Regent of West Bandung District has some programs involving many parties. For example the West Bandung District is collaborating with government tax office to educate them regarding tax and also encourage them to be registered as tax payer.

Other program is regarding the village fund aid from the central government. Distribution of the fund aid from central government will be prioritized for the ones who already have tax payer number. Therefore, women who are ready to start their small-scale family business, registered themselves as tax payer.

Another program is the collaboration with Widyatama University. Women from Gunung Halu villages could discuss their business problems with lecturers from Business Management Faculty and Economic Faculty. The lecturers gave insight from scientific point of view regarding how to build and engage in a good business.

Problems arising from the discussion were the factors that hindered them in doing or starting their small-scale family business. Those factors are the basic for this exploratory research. This research scrutinized them from the accounting theory point of view, discussed them with the suitable background theories that suitable in the situation, and then concluded with revolutionary suggestions.

## **LITERATURE REVIEW**

This literature review would be the fundamental for the discussion regarding the factors that hindered the women's family business from Gunung Halu villages. Although the focus of this research is on the financial recording or journalizing, the accounting matters, the review include other theory such as marketing. Also, since the suggestion is related to the Internet of Things and Industry 4.0 Revolutions, the literature review includes theory from technological point of view.

### ***Accounting in Brief***

To understand what is accounting, the literature review starts with the important fundamental knowledge of accounting in brief, as follows:

### ***The Definitions and Objectives of Accounting***

Accounting definition from the syntactical point of view is a process to record/journal, classify/post, summarize, and then provide financial statements as the information of an entity's financial condition. That is the definition from Accounting Terminology Bulletin no. 1 (Hendriksen & van Breda; 1992). This is merely the process of producing financial statements, which was the objectives of accounting. The process has specific characteristic that differentiate accounting from the recording of simple cash inflow and cash outflow. Accounting uses the method called double entry bookkeeping, the debit and credit recording method. (Hendriksen & van Breda, 1992) (Godfrey, Hodgson, Tarca, Hamilton & Holmes; 2010)

The objectives of accounting shifted from merely syntactical to become more semantic. According to Accounting Research Study No. 1, the objectives of accounting then is to record the resources, the claims against and the interest in them. Those items are embodied in the statement financial position, which are the assets (resources), liabilities (claims against resources) and the owner's equity (interest on the resources).

Accounting also have to record the changes in the resources, claims and interest. That means accounting should record the activity which cause the changes in statement on financial position, those comes from revenue earning activity. Therefore, accounting also has to produce an income statement as the information of the entity's financial performance activity. (Hendriksen & van Breda, 1992)

Financial Statements as the product of accounting recording process is important to provide financial information regarding an entity. The financial statements is a useful tools for decision maker. The decisions derive from financial statements are usually regarding investment and similar decisions. Therefore, the financial statements should reflect the real financial condition of an entity. That is the objective to prepare an accounting financial reporting from the pragmatcal point of view. (Hendriksen & van Breda, 1992) (Godfrey, et.al, 2010)

The objectives of accounting according to FASB (Financial Accounting Standard Board) is to provide information regarding the unpredictable future cashflow that user could receive, whether it is in the form of payment of dividen or payment of interest and the repayment of debt. FASB tend to generalize users of financial statements as present and potential investor and creditor (Hendriksen & van Breda, 1992) Similar to that, Institute of Indonesia Chartered Accountants stated that the objectives of financial statements is to provide information regarding financial position, as well as entity's performance and the changes of financial position, which should be useful for majority of users in economic decision making. (Ikatan Akuntan Indonesia, 2015). The position of International Financial Reporting Standards also in the same shoes that accounting objectives now is tend to focus on the usefulness of the information (Kieso, Weygandt & Warfield, 2017)

### ***Basic Assumptions of Accounting***

The basic assumption of accounting lay as the fundamentals of the implementation of accounting. Those are: the separate business entity assumption, going concern, periodicity, monetary unit, and accrual basis. Two that correlated with this study are discussed below:

### ***Separate business entity assumption***

Before an accounting could be implemented, there should be a preliminary assumption that should be complemented. The first and most important is the separate business-entity concept. (Kieso et.al,2017)(Skousen, Stice & Stice,2009)(Kimmel, Weygandt Kieso,2017)(Warren, Reeve & Duchac,2014). According to this assumption, an entity that uses accounting as a tool to record its financial activity, has to separate the recordings from its environment. Accounting treats an entity as an individual. It means an entity could have its own assets, its own obligations, and its own equity or capital.

This basic assumption is very important to ensure that everything that an accounting records would exclusively regarding the entity alone. It would not include the recording of any other parties connected to the entity, such as the consumers, suppliers, and even the shareholders or the owner itself. This condition would ensure that everything recorded by accounting reflects the financial condition of the entity alone.

Therefore, the financial statements if an entity would serve its purpose as the media to communicate its financial condition to its users. The financial conditions includes the profit or loss from one period of time, the position of resources (assets), claims on obligation (liability) and interest (equity) of the entity on a specific date (Hendriksen & van Breda,1992). This basic information is useful for the investment and similar decision making of – especially - the present and potential investors and creditors and other users.

### ***Accrual Basis***

Accounting is different from the usual recording of cash flow because of the accrual basis assumption. This is one characteristic that not all common people can easily understand. The definition stated that by this assumption accounting have to record transaction at the very time an event occurs. Yet, occurrence in accounting is sometimes also not in line with common understanding. Best explanation of accrual basis for ordinary people is that accounting can record a transaction before or after cash flow, whether inflow or outflow. It means accounting can record a revenue before or after any cash go into the entity. It also means that accounting can record an expense before or after cash go out from the entity, even when there would be no cash go out from the entity. (Kieso et.al,2017)(Skousen et.al,2009)(Kimmel et.al,2017)(Warren et.al,2014) (Ikatan Akuntan Indonesia,2015)

One example of accrual basis accounting is the allocation of expense into some periods or years, without the cash outflow along with it. The systematic and rational calculation and recording of depreciation expense for assets that

has a longterm usage is one of them. There would never be an outflow of cash during the recording of expenses. It because that the cash outflow comes from another transaction, which is when the acquisition of assets, before the allocation of expense. (Godfrey et.al,2010)

### ***Internet of Things, Big Bang and Industry 4.0 Revolution***

The computer as the automatic machine was introduced in the 1950s. The computer was the first step of the new era. With the system and mainframe in it, computer become the most helpful tool in many companies. Then came the personal computer that elevate the usefulness of the computer not only to a spesific group af companies, but to all people as individual. Then, internet is one thing that enable man to go to the moon. But not until 1969 the internet became widespread in usage.(Fellestein& Wood;2000)

When government's regulation enable accesability of the internet connection and provide security, public could gain much benefit from it.Now, with the internet connection available for personal user, the computer had been the agent of change to the world. The Internet of Things (IoT) is a concept where everything is done by taking advantage of the internet connection. (Fellestein& Wood;2000)

With new technology and innovation rapidly changes and evolve, the technology is getting cheaper. In the future the cost of making a phone call, placing order on-line, payment, and all other things using internet is going to be much less costly than today. (Fellestein& Wood;2000) (Ferris & Whipple;2000)

One of the usage of IoT is in commercial activity. E-commerce is a technology that involved purchase and sales transaction laying on internet connection as the infrastructure platform of the process.The reason e-commerce become the mainstream like today is because of the immediate and real benefit that people could flourish from it. E-commercet opens up to many possibilities of commercial transactions, not only buying or selling goods, but also services for anyone who have a computer that has access to internet.

It also increase competitiveness and savings, therefore everyone involved in the transaction could no longer become the king of the world that can do anything he likes without considering what others may do. This could drive the transaction to be cheaper, more effective, and more efficient. (Ferris & Whipple;2000)

E-business is one kind of activity within the e-commerce which allow users to take advantage of other parties built-in software or platform, for wxample to do buying and selling, to store data, or to spread any information such as marketing promotion. This also using e-commerce for the basic platform, but offers more convenient to users, especially in regards of cutting down investment for building a software program. (Fellestein & Wood;2000)

Another IoT is the e-government. governments around the world now are taking part of the incredible global infrastructure of the internet. They use it as the media for reaching to the society, gathering massive data to get better understanding of the characteristic of the society in the country or a region and to serve better. (Fellestein & Wood; 2000)

One example for e-government is the portal for tax administration. With the e-filling software program for taxpayer, the benefit is obvious for both the government and the taxpayer. People do not have to waste their time to travel to the government office and stand in a long-line to do one thing that they do not like: paying tax. Also the government could cut-off many workers to serve the public face-to-face with forms to fill-in and questions to answer, and then still to do another step that is to input the data from the document into the computer. The government employee could do other activities, either to catch up with necessary administrative of accountability or to enhance the service to public. With many portals the government opens, the government provides many convenient process for the public. (Chaudhury & Kuilboer;2002)

IoT allows the world to enter the Industry 4.0 Revolution. The Industry 4.0 is the fourth stages of industrial revolution. The concept that brings the Industry 4.0 to become a new era in industrialization was the cyber-physical system and the IoT (Raminqwonq, Manopiniwes & Janqkrajarnq;2019). Cyber-physical system involves computer engineering and it integrate the computer with the physical process. (Wan, Yan, Suo & Li;2011).

To achieve the newest stage of this industrial era, the Industry 4.0, the option are to go through the phase implementation or big bang implementation. The phase implementation carried out by preparing the infrastructure piece by piece. It would be considered less costly for a company with low budget, but the disadvantage is that along the time, the technology would be obsolete before the company had the chance to increase to the highest level. Therefore, it would be another investment for the newer technology. The second option is to go big bang. It means to do all the module simultaneously in all area. If a company had to build all from scratch, it would be enormously costly. However, with the help of e-business, the cost for building the platform could be reduced. Taking advantage of the infrastructure that had been provided by other players. (O'Leary;2000)

It is also important to choose software program wisely. It should be the combination of "As Is" and the "To Be". The "As Is" is the module that is required to run the current process. The "To Be" module provide the future model of an entity. Since computer technology rapidly changes, it is wise to combine both model. (O'Leary;2000)

## **FINDINGS AND DISCUSSION**

The findings of this study is based on research method applied for this exploratory study. The research method, the findings and the discussions of the findings are explained as follows:

## **RESEARCH METHOD**

To conduct this exploratory study, questionnaire were the primary tools to gather data, as well as interview with some of the respondents. There were 22 respondents of this study. They are all women from some villages around Gunung Halu, West Bandung District, West Java, Indonesia. They are in the early stage of building a small-scale family business. They were invited for a workshop held by Widyatama University lecturers in collaboration with the West Bandung District government. The questionnaire were distributed before the workshop.

During the workshop there were also interviews with some of the respondents conducted in regards to this study.

According to the preliminary survey to the regions, the average education of the respondent were quite low, some graduated form elementary school and junior high school, some even never graduated from elementary school. Due to that condition, the questionnaire were created to meet the purpose without too complicated in wordings, to avoid confusion and misunderstanding.

Answer to the questions are divided into 3 categories that shows the span of understanding of the respondent toward the matter in question. The answers are:

- Always, which shows that the respondent very capable regarding the matter in question, therefore it also shows the high understanding of the matter in question
- Sometimes, which shows that the respondent are only average capability regarding the matter in question, therefore it also shows the average understanding of the matter in question
- Never, which shows the lack of capabilities of the respondent regarding the matter in question, therefore it also shows that the respondent does not have any understanding of the matter in question

The questions are divided into three categories, the first is regarding the knowledge of one basic accounting assumption, the second category falls into the questions regarding basic understanding of simple financial recording. The third category is regarding the probability of ability to cope with their situation using the resources they have.

Those three categories can be drawn into the hypothesis as follows:

Ho1	:	The women engaged in small-scale family business does not understand separate business entity assumption
Ha1	:	The women engaged in small-scale family business understand separate business entity assumption
Ho2	:	The women engaged in small-scale family business does not understand simple financial recording
Ha2	:	The women engaged in small-scale family business understand simple financial recording
Ho3	:	The women engaged in small-scale family business does not have

		probable capability to cope with the situation
Ha3	:	The The women engaged in small-scale family business have probable capability to cope with the situation

The conclusion of hypothesis is drawn by the frequency of the answer from the respondents. Since the questionnaire consist of median answer (sometimes), therefore, the median answer are not considered in the drawing of hypothesis conclusion. However, the median answer is still included in the discussion along with the result of the interview.

## FINDINGS

Findings of this research using the questionnaire tools are shown in the Fig. Table 1, 2, and 3. However, since the tools used for this study includes interview, therefore the discussions would include the result of the interview that expand the view on the problems they face.

The first category of question from the questionnaire are regarding the fundamental knowledge of accounting or financial recording. As explained above, considering the level of education of the respondents, the questions are created to be simple. The first two questions are to meet the purpose of knowing their span of knowledge regarding the basic accounting assumption mentioned in the litelature review above.

Table 1 consist of two questions that is created to find out whether the knowledge regarding the separate business entity assumption is pre-exist in their mind. The total frequency of the answer shows the span of their understanding regarding the importance of the assumption in recording transactions.

**Figures Table 1.** Frequency of knowledge on Separate Business Entity Assumption

Questions\Answer	Always	Sometimes	Never	Total
Can you separate cash inflow from business and non business?	7	7	8	22
Can you separate cash outflow from business and non-business?	13	6	3	22
Total Frequency	20	13	11	44
Percentage total frequency to total answer	45,45%	29,54%	25%	100%
Average (Total frequency divided by 2 questions)	10	6,5	5,5	

The average frequency shows that the “always” answer is more than the “never” answer. It means that the respondent have a fundamental understanding to separate the transactions of business activities from their daily activities. Therefore, the hypothesis accepted is that the women engaged in small-scale family business understand separate business entity assumption.

Table 2 consist of three questions regarding their ability to record the simple financial transaction. It is not considered important whether they record their business transaction or their daily expenses, also not important whether they record them in a piece of paper or simply in their mind.

The answer from Table 2 shows that respondents' answer for "always" is more than "never". Therefore, the hypothesis accepted is that the women engaged in small-scale family business understand simple financial recording.

**Figures Table 2.** Frequency of recording business transaction

Questions\Answer	Always	Sometimes	Never	Total
Do you know for sure cash inflow daily?	8	14	0	22
Do you know for sure cash outflow daily?	8	11	3	22
Can you calculate the income from your business?	11	9	2	22
Total Frequency	27	34	5	66
Percentage total frequency to total answer	40,90%	51,51%	7,57 %	100%
Average (Total Frequency divided by 3 questions)	9	11,33	0,83	

**Table 3** consist two questions regarding their probability to cope with the situation using resources they have or they can get. The first question is regarding the possibility of increasing their capital, using fund from legal institution, the bank and cooperation. Considering they are legal institutions, they probably would ask for financial statements or any simple recording or proof of business activity transactions before anyone can get any loan. The second is regarding their probability to reach for a higher level of help using the high technology, that is the use of smartphone and internet connection.

**Figures Table 3.** Frequency of probable resources

Questions\Answer	Always	Sometimes	Never	Total
Did you ever have loan from bank or cooperation?	3	5	14	22
Do you have phone with internet connection?	9	6	7	22
Total Frequency	12	11	21	44
Percentage total frequency to total answer	27,27%	25%	47,72 %	100%
Average (Total frequency divided by 2 questions)	6	5,5	11	

The frequency of the answer shown in Fig. Table 3 is that "never" answer have more poin than the "always" answer. Therefore, the findings show that

the third hypothesis accepted is that the women engaged in small-scale family business does not have probable capability to cope with the situation.

The discussion of the findings is elaborated with the interview result is presented in the section below:

## **DISCUSSION**

From the answer of the questionnaire, considering only the extreme “always” and “never” answer, this study found that the presumed condition of the lack of understandability of basic financial recording is not proven. However, since this is an exploratory study, therefore the median answer can not just simply disregarded. The discussions below also includes the interview and discussions with some respondent during the workshop.

Applying the condition of this accounting basic assumption into the small-scale family business of the women from Gunung Halu villages means that first and foremost they have to be able to separate their financial records. Simply put, they have to be able to separate the cashflow from the business from other sources. For example money from their husband for the family's day-to-day living expenses. Without this condition implemented, accounting would end up as information of rubbish, because it is not reflecting the performance of the business.

The accounting recording would not accept “sometimes” as the process conducted in journalizing the transaction. Therefore, considering the “sometimes” answer to the questionnaire, the result shows that 59,08% of them actually could not record their business transaction in a proper way. Also, because the questionnaire only ask about the cash transaction, it is not considered as a proper accounting way of recording, since accounting use the accrual basis method. Therefore, there is the possibility that in the “always” answer also include the respondent who does not know anything about accrual basis.

Deeper interview revealed some conditions regarding this understanding of recording the transactions and calculating their profit. Evidently, some of them sell their product on credit. However, they did not include those kind of sales as a revenue. Follow the sales on credit, there should be a calculation of bad debt, which they never include in the profit and loss calculation, despite their confession that the bad debt usually high.

Another problem considering the accrual basis accounting for recording the transaction is regarding the fixed assets. The equipment they sometimes is not exclusively used only for the business. Especially for those who engaged in the culinary business. Since it is really a small-scale family business, the equipment for the business are borrowed from the family equipment. Even when the equipment is exclusively separated, some of them did not understand the concept of expensing the depreciation of the usage of the equipment.

After the discussion and interview with some of the respnden, the findings related to the calculating profit or loss could be considered as doubtful. Hence,

they never include the doubtful account as a potential loss. The good thing is that they are forced to struggle with the only fresh money they have. But the problem is, they actually did not calculate the profit or loss in the proper accounting way.

As the discussion above, it is in fact that calculating profit or loss in a proper accounting way is not that easy. The government could try to educate them regarding the basic, just as the workshop intended to. However, considering the level of education of many of the respondents, it would be a huge challenge. In the end, they would not be able to catch up.

Considering the shift of accounting objectives from the syntactical point of view to be semantic and last and utmost is the pragmatic (Hendriksen & van Breda, 1992), it showed how accounting shifted its focus of importance. Therefore, accounting now days should not merely thinking about how to process a transactions to become an information, or what information should be there, but the use of it. This conditions showed that as a dynamic knowledge, accounting does not focus on the recording process anymore, which is now is done by computer software program. The stress now is on the usefulness of the information, which is the pragmatic side of accounting.

Understanding the accrual basis is a must to accept accounting as the proper recording for any business transaction to produce financial statements. However, with all the computer software program around us today, users should not have to be technically able to record the transactions to be able to produce the financial statements.

With the IoT many activities can be much easier to do. The most practical everyday activity using this is the communication using smart phone. The findings from the questionnaire shows that respondents who could access the internet is 15 out of 22. One thing for sure is that they have the internet connection in the area. The other 7 probably could not afford the smart phone due to poverty.

The poverty could have been overcome if they could get more capital for the business. The problem is most of them (14 out of 22) never get the loan from bank or cooperation as the questionnaire showed. Only 3 of them could always get loan from bank or from cooperation. The most probable reason is that they are not eligible to get loan due to poor recording of their business, therefore they could not provide a proper financial statement that is reliable.

The big bang implementation (O'Leary;2000) could be the answer to help the women as for their small-scale family business to grow. Of course, with the support and funding from the Gunung Halu District. The idea is to provide them with a smartphone that could help them in e-commerce and in recording their business. The smartphone should have a feature to help them in recording their transaction and prepare the financial statement. With the reliable financial information, they should be able to get loan from legal institution, as long as their business is going concern.

With the e-business available, government does not have to invest too much in building the infrastructure. The important part is to choose the process and the product to use in order to accomplish the goal. However, the local governments still have to provide other infrastructure to relate to other area, such as transportation for distribution and supply chain. When preparing for the platform, the model should include the “To Be” model. Therefore, the district could be ready to leap into the industry 4.0 all in the same time (O’Leary; 2000).

## CONCLUSIONS AND RECOMMENDATIONS

The women from Gunung Halu Villages need a comprehensive program to help them in their small-scale family business. The comprehensive program should include the IoT to empower them in all aspects. The West Bandung District should prepare some modules that should be implemented in a wide area as the big bang model. Those modules have to be comprehensive and future oriented.

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