COLLEGE OF ACCOUNTING

MANAGEMENT ACCOUNTING | BASIC

Video Transcription: Understanding the Production Process

Hi my name is Yolandi and in this video we are going to look at a production process and the information and characteristics we get from a production process, in order to help us design a process costing system. The aim of the video is to better understand the information we need, to be able to determine equivalent units.

In order to do this, we will look at the production process of bread. In this case, one loaf of bread is one unit of production. The aim of process costing is to determine what it costs to produce one loaf of bread. What is important to notice about this production process is that it is a mass production of one product. And so all the loaves of bread look exactly the same. They go through exactly the same production process and these are important characteristics of a manufacturing process that needs to be in place before we consider using a process costing system.

The production process is as follows: the different ingredients are obtained from storage; all the ingredients are thrown together in a large mixer and mixed; once the ingredients are mixed together thoroughly, it is placed in a container where the dough ferments; the dough is then divided into predetermined sizes and these move along the conveyor belt; at this point, the dough balls are inspected for consistency; the balls are shaped in loaves, placed into pans and baked in an industrial-sized oven; the loaves are cooled down and packaged; once this process is finished, the finished loaves of bread are taken to storage from where it is shipped to various customers.

This is the beginning of the production process, where we introduce the raw materials and over here, the production process is finished, once we have the finished loaves of bread. This production process is represented by the work in process account in the financial records. Anything that happens during the production process is considered to be a manufacturing cost and will be included in the costing calculation. Anything that happens after the production process is not considered to be a manufacturing cost and is therefore not relevant to our exercise of trying to determine what it costs to manufacture one unit. Here, we can see the raw materials enter the production process. The raw materials are issued from storage. In the financial records, this transaction will look as follows: debit work in process and credit raw materials. The raw materials make their way through the various machines and are being transformed into the final product, which in this case is a loaf of bread.

As it moves along, we can see workers working on the production line and ensuring everything runs smoothly. These costs are captured as they are incurred. All costs incurred during the production process are captured in the work in process account. This means that the work in process account will be debited with these costs. Here we can see an inspection is done on all the units. Purpose of the inspection is to ensure that all units manufactured meet a certain standard of quality. The inspection can be done by a person or by a machine. What we also notice, is that if the units meet the quality inspection, they continue on the conveyor belt and are completed. Those units that do not pass the quality inspection are taken off the conveyor belt and are discarded. This is important to notice as it means that no further costs will be incurred on these units.

Over here, the units are completed and transferred to storage, where it will be distributed and sold. The accounting entry for this is to debit finished goods and to credit work in process.

What you have learnt in management accounting is that when we design a process costing, we have to be able to determine equivalent units. This is especially important if we have incomplete units at the end of a reporting period.

Remember that equivalent units are based on the percentage of cost, which we have incurred on these units until the point of the production process.

In order to design our process costing system and in order to determine equivalent units, we have to express our production process in terms of to what extent units have moved through the production process and where costs are being incurred. There are many different ways to do this but in our example we are going to use time to illustrate this process. Now let us return to the production process to show you these steps. You will remember that while we were talking through the production process that there was an indicator of how long it took for each stage to be completed.

The company has determined that it takes 150 minutes in total for a loaf of bread to be produced from start to finish. The beginning of the production process is at time 0 minutes and the end at time 150 minutes. At a 150 minutes the units are finished and leave the production process. At this point 100% of the production process has been completed. Why do we say that over here it is 0% of the production process and over here 100% of the production process? This is because for our costing purpose we are only concerned with the cost incurred during the production process, which in this case is from the 0% point to the 100% point. These are the costs incurred to manufacture the product.

The inspection happens at 125 minutes into the production process. Now we can state those important points of the production process in terms of percentages and demonstrate it on a timeline – 0 minutes will be at 0% point and the inspection takes place at 83% into the production process, therefore our timeline will look as follows.

The costs we are concerned with are your raw materials, which is also known as direct materials, your direct labour and your manufacturing overheads. Your direct labour and your manufacturing overheads are considered to be conversion costs because these are the costs incurred and necessary to transform your raw materials from the raw material state to a finished product.

When producing loaves of bread, we can see that all the raw materials, which are in this case the ingredients, are introduced at the beginning of the production process. This means 100% of raw material costs are incurred at this point. Therefore, it does not matter where on this production line the product is, 100% of the raw material costs have already been incurred. We can also see that the manufacturing overheads and the labour costs are incurred all along the production process. This is why we often make the assumption that these costs are incurred uniformly or evenly along the production process. So for example,

75 minutes into the production process, which is the 50% point of the production process, we would have already incurred 50% of our conversion costs. Now we can use this information to complete our timeline.

Now that our timeline is complete, we see that there are two things we need to do before we can design our process costing system and before we can determine equivalent units. We need to know where on the production line we are, which is indicated by the information below the timeline. We also need to know to what extent we have incurred our production cost. This information is shown above the timeline. So let me show you how we are going to use this timeline to answer our process costing question and to determine equivalent units. We are going to consider two scenarios.

In scenario one, the company has produced 1 000 completed loaves of bread. If you look at the timeline, where do you think we are on the production process and how much of our manufacturing costs have we incurred? The completed units are finished and have moved through the whole production process, therefore, we are at 100% on the timeline in terms of our production process and at 100%, we have incurred 100% of our raw materials and 100% of our conversion costs.

Now, let's look at another example. The company has finished 1 000 loaves of bread. They also have 100 loaves of bread that are still being produced. It is incomplete. The production process was stopped at the inspection point. Now, using your timeline, where do you think we are on the production line and how much of our costs have we incurred on these incomplete units? The completed units will be the same as for scenario one. We would have incurred 100% of our raw materials and 100% of our conversion costs. For our incomplete units, let's have a look, where on the production line and on the timeline our inspection point is. We can see it is over here at 83%.

Above the timeline, we can see which costs have been incurred. We can see that 100% of our raw materials have already been incurred because it is introduced at the beginning of the production process. We also know that conversion costs are incurred uniformly across the production process. This means that at the inspection point, which is at 83% of our timeline, we know that 83% of our conversion costs have already been incurred. Now, for scenario two, since we have incomplete units, we need to calculate equivalent units of production. We are going to use the information we have determined thus far to do that calculation.

Remember that equivalent units are determined based on the percentage of costs, which we have incurred on those units.

For the 1 000 completed units, we know that we have incurred 100% of our raw materials and 100% of our conversion costs and therefore we are going to include 1 000 units for our raw materials and 1 000 units for our conversion costs. For our incomplete units, which were 100 loaves of bread, we are going to include 100% of our raw materials cost, which translates into 100 equivalent units and we are going to include 83% of our conversion cost, which translates into 83 units.

Now we have enough information to calculate our equivalent units. We add the equivalent units for raw materials for our completed and incomplete units and we add the equivalent units for conversion cost for our complete and incomplete units to find that the equivalent units for raw materials are equal to 1 100 units and for conversion costs, the equivalent units are equal to 1 083 loaves of bread.

In this video, we looked at a production process and we looked at how to use information from the production process to help us design our process costing system and to help us determine equivalent units. In the future, when you are faced with the process costing question, remember to draw your timeline so that you can make sense of the production process and you can know how to use that information to determine equivalent units.

Thank you.