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Value Stream Analysis: An Overview of 5 Case Studies

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Value stream analysis characterizes all the activities both value added and non-value added that are performed in a given process. This paper will focus on five different case studies that implement value stream analysis in their business or field. The fields that will be discussed is the medical industry, two examples in the construction industry, the furniture industry and the transportation industry. By having an in depth look at these industries we can demonstrate the importance of value stream analysis.

The first case study is of a 400-bed hospital in an urban area. As the costs in the healthcare industry are increasing at double digit rates there is a need to reduce costs. The way this hospital decided to reduce cost was by implementing a computerized ordering system to replace the old had written paper prescription process. Due to the errors in this area, medication error deaths reach up to 7000 a year and costs up to 66 billion per year (Kocakülâh).

The problem of the current state value stream starts off with that 30% of orders submitted to the pharmacy lack required information. Due to the excess time it takes it requires 5 pharmacists and one pharmacy technician to fulfill orders. The future state value stream map solves this problem by computerized order entry instead of hand-writing prescriptions. Due to this change the hospital would be able to remove on pharmacist and one technician from the ordering process and relocate them to other positions as well as reduce the errors from 30% to 5%. In total this system is expected to reduce system expenses by 30% (Kocakülâh).

The second case study is in the construction industry focused on the supply chain, specifically overviewing the problem that pipes often do not arrive on time. The business in question decided to apply a value stream analysis to reduce the lead time in delivery of these pipes. The VSA demonstrated that a pipe support takes from 28 to 37 weeks to flow through the system. The analysis also expressed that the about 3.6% of the total time a pipe needs to flow through the system signifies value-added time. The rest of the 96.4% is non-value-added time, or waste (Arbulu).

The current state value stream shows that there are several activates that can be reduced or totally eliminated. An activity called Select Supplier and Send Info' was determined to not add value and could be eliminated completely reducing work time by 1-2 hours and could reduce the total lead time by 1 week. Other ways the lead time could be reduced included reducing batch sizes and the degree of multitasking, especially during design and in other phases, standardizing products (pipes) and processes. Early adopters of this process were able to save a total of 6-7 weeks of the lead time that was usually required (Arbulu).

The third case study is also in the construction industry but focuses on housing construction. Lengthy delivery time and substantial waste in the construction industry have caused many home builders to seek a more effective production model that will increase process reliability, reduce total lead time, and improve quality. A methodical approach based on value stream mapping technique was developed h to analyze the current process and to develop a lean production model (Yu).

The entire house building process is divided into five stages in the current state map. The planned duration of Stage 1 is 20 days, but houses actually spend an average of 73 days in this stage. Stage 1 also had a large standard deviation of 35 days. As a result of these two factors it was determined that a value stream analyses on stage one would have the greatest likelihood of being able to reduce cost and time. After the map was drawn the wastes that were identified as problems with variation. In order to solve these variation problems the to-be system would include four measures to reduce variation: establishing a production flow and synchronizing it to takt time; leveling production at pacemaker task; restructuring work; and improving operation reliability with work standardization and total quality management. As a result of these actions the number of handovers was reduced and total lead time was further reduced to 50% of that of the current process (Yu).

The fourth case is an upholstery furniture manufacture in China. The value stream analysis for their firm pointed out several issues: lack of standardization, inefficient communication, insufficient engineering capacity, inefficient work layout, inefficient engineering design tool. The future state analysis solved these problems in several ways. To reduce the lack of standardization was to introduce a standardized format for design drawings, as well as include a system to help automate the task. To solve the inefficient communication, which was due to customers making changes at any time during the development cycle, was to establish a point in the where there could be no more changes made. To resolve the insufficient engineering capacity the checking documents for correctness step was found to have waste and increased the cycle time. The solution discovered was to implement an online checking system to reduce wastes such as excess printing and allows the engineer to make corrections as soon as they receive the electronic review. To fix the inefficient work layout a work cell layout was introduced to improve efficiency so that supervisors and engineers can physically work together and the office supplies are readily available. The improvement of the engineering design tool was done by implementing a 3D design tool to help find overlapping components. The lead time was reduced from 133.9 to 14.7 days (Wang).

The last case study was of a trucking company in India. Trucking in India moves 77% of the total goods in the country. This number is expected to grow due to the increased number of road projects the Indian government are developing. The trucking industry in India was at the time of the case study very disorganized. This disorganization was in part due to most truckers in India are owner operators with 77% of truckers owning less than 10 trucks. Also there were other issues such as inefficient and ineffective operations (Prabhu).

The trucking process has four major activities: identification and getting the load, reading the loading point and loading the truck, moving the goods to the destination, reaching the unloading point and unloading the goods and receiving payment. The problems with the as is system includes delays of over 100 minutes inefficient loading and unloading. The to-be system would solve these by rearranging the loading of the truck, improving communications with the supplier to have all the material to be loaded available before the truck arrives. Having separate people load/unload the truck instead of the driver, so the driver can do paperwork while the other personnel loads/unloads the vehicle. Another reduction the value stream pointed out was to

reorder the scheduled breaks instead of having the first break 11 minutes into the shift it would be moved to an hour after the second break to reduce fatigue and reduce fuel consumption. Using these improvements the total hauling time was reduced from 992 minutes to 662 minutes (Prabhu).

As these cases have demonstrated, the value stream analysis is an important tool that can reduce costs in any industry in any part of the world. It also can highlight which areas do not add value to the company and focuses on how to reduce those non-value added activities. Applying this tool can save millions of dollars in the long term as well as improve efficiency so all business that are not currently applying this to their business should consider doing so immediately.

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