HSB
Hochschule Bremen
City University of Applied Sciences

PROJECT MANAGEMENT

SS 2018

ASSIGNMENT

DEVELOPMENT OF A NEW COFFEE GRINDER

Date: 28/05/2018

by

Shinde Mrinal Vinayak (Matriculation No.: 5021349)

guided by

Prof. David Ashworth
(Denmark Technical University)

HSB
Hochschule Bremen
City University of Applied Sciences

Contents

Introduction

Coffee for some is an indispensable part of their everyday lives. There is nothing like that first sip of coffee in the morning and two new large studies confirm a few daily cups of the intense brew can be part of a healthy lifestyle.

We conducted a qualitative research and our research objective was to determine which coffee do customers prefer more. From this research we got clear picture that consumers are drinking different types of coffee based on how their day has gone.

Each brewing device requires a unique grind size. For example, an espresso shot calls for a finer grind, while a French Press requires a courser grind. One of the major advantages of having a coffee grinder is that we could decide which coffee to have depending on our mood. There are several reasons why it is wrong to buy pre-ground coffee. Few of the problems are because the coffee oils are very delicate, which makes them an easy victim of contamination. This will contribute to your coffee tasting experience. The cells inside the roasted coffee bean contain approximately 1,000 different volatile aromas and flavours. Once ground the volatile aromas are immediately released and they react with oxygen in the air (oxidation). After 15 minutes ground coffee loses about 60 % of its aroma. The best solution to this is always grind your coffee freshly just before brewing.

The coffee grinder could be manual or electrically powered. One of the main benefits of an electric grinder is that they are very simple and easy to use. All you have to do is load the hopper, select your grind size, and flip the switch. In seconds you will have fresh grounds ready to be brewed. Also if you love espresso, it may be worth the extra money to buy an electric grinder. Achieving that fine espresso grind on a manual grinder is both arduous and time consuming. With some manual grinders it may take so long, that your grounds will start to go stale before you even begin to brew.

The coffee grinder could either use blades or burrs. For balanced coffee, you need uniform grounds. Blade Coffee grinders do not grind, they chop. If you put a handful of coffee beans through a blade grinder for a few seconds, you will instantly notice that the grounds are all shapes and sizes. That wont make you delicious coffee. Blade grinders have no mechanism to allow you to choose a grind size either. They are inconsistent, do not open any doors for using other brewers, and are simply a waste of money. The only good option for a coffee grinder is a burr coffee grinder. Instead of using blades to chop and spin the beans, burrs funnel beans down a narrow pathway and grind them consistently.

The purpose of this project is to design a electrical coffee grinder and manufacture a prototype of this design. A prototype testing will also be carried out using in-house 3D printer before the start of actual bulk production. This report gives an overview of proper planning, execution, monitoring and controlling of the project for the desired outcome.

Modelling the Project

It can be easy to lose sight of the core elements that make up any project. Each of these elements ties into the others, and together, they form the fabric that is this project. The prime four elements in the project are the tasks, the resources, the interested parties and the environment. The composition of each of these elements is shown in Figure 1 and is also discussed in the next topic.

Figure 1: Basic Elements of a Project

0.1 The Tasks

The task in this project is to cater to the specific requirement of the consumer especially for home use with the intention of providing the consumer with the option of selecting the types of coffee grind size he/she wants and also providing them good quality powder with an easy to use mechanism thereby moving a step further of the machines which are available in the market for home use/offices/colleges/food franchise. The tasks comprises of research on what is required in-order to develop the coffee grinder, product design, analysis, manufacturing, quality control, marketing and distribution.

0.2 The Resources

The resources cover a very wide range. They include knowledge, ability, people, buildings, machines, money, etc. The main resources are the teams that are assigned for the specific tasks.

0.3 The Interested Parties

If you understand the needs, expectations, and requirements of your interested parties, it is easy to see that these are critical to ensuring that your products or services meet requirements. So, it is important to know and understand your interested parties if you are to properly plan and implement the processes of your project. Without doing this critical step well, you run the risk of having problems when your product or service is used.

Offices, canteens and Banks comprise of many individuals having different taste buds and thus prefer to have various types of coffees. Hence it is always better to have a coffee grinder which could grind in various sizes in-order to have different types of coffees depending on ones mood. Fast food franchise would find the coffee grinder a simple and faster tool to cater the needs of many customers. Positively interested parties are ready to contribute to this by providing supporting arguments, feedback, or direct support in the form of cross marketing or other resources. The negatively interested parties would be the competitors, companies selling pre-ground coffee and the health ministry. Compliance obligations might include all relevant legal requirements, all requirements imposed by upper levels in the organisation (for example corporate requirements) and all relevant requirements of relevant interested parties that the organisation decides to comply with, whether contractually (customers) or voluntarily (environmental or safety commitments).

0.4 The Environment

The project environment artefacts evolve through three discrete states: the prototyping environment, the development environment, and the maintenance environment. The prototyping environment includes an architecture testbed for prototyping project architectures to evaluate trade-offs during the inception and elaboration phases of the life cycle. The development environment should include a full suite of development tools needed to support the various process workflows and to support round-trip engineering to the maximum extent possible. The maintenance environment should typically coincide with a mature version of the development environment. In some cases, the maintenance environment may be a subset of the development environment delivered as one of the project's end products.

Structuring the Project

There are two main criteria which are interdependent, the Work Breakdown Structure (WBS) and the Organisational Breakdown Structure (OBS). Together, these help in the formation of the Responsibility Matrix (RM) for a project.

0.5 Work Breakdown Structure

The top level represents the final deliverable or project. Sub-deliverables contain work packages that are assigned to a department or unit. The WBS of the project consists of three levels, each hierarchy is identified with separate colours and is as shown in Figure 2.

The work breakdown structure has a number of benefits in addition to defining and organizing the project work. A project budget can be allocated to the top levels of the work breakdown structure, and department budgets can be quickly calculated based on the each project's work breakdown structure. By allocating time and cost estimates to specific sections of the work breakdown structure, a project schedule and budget can be quickly developed. As the project executes, specific sections of the work breakdown structure can be tracked to identify project cost performance and identify issues and problem areas in the project organization.

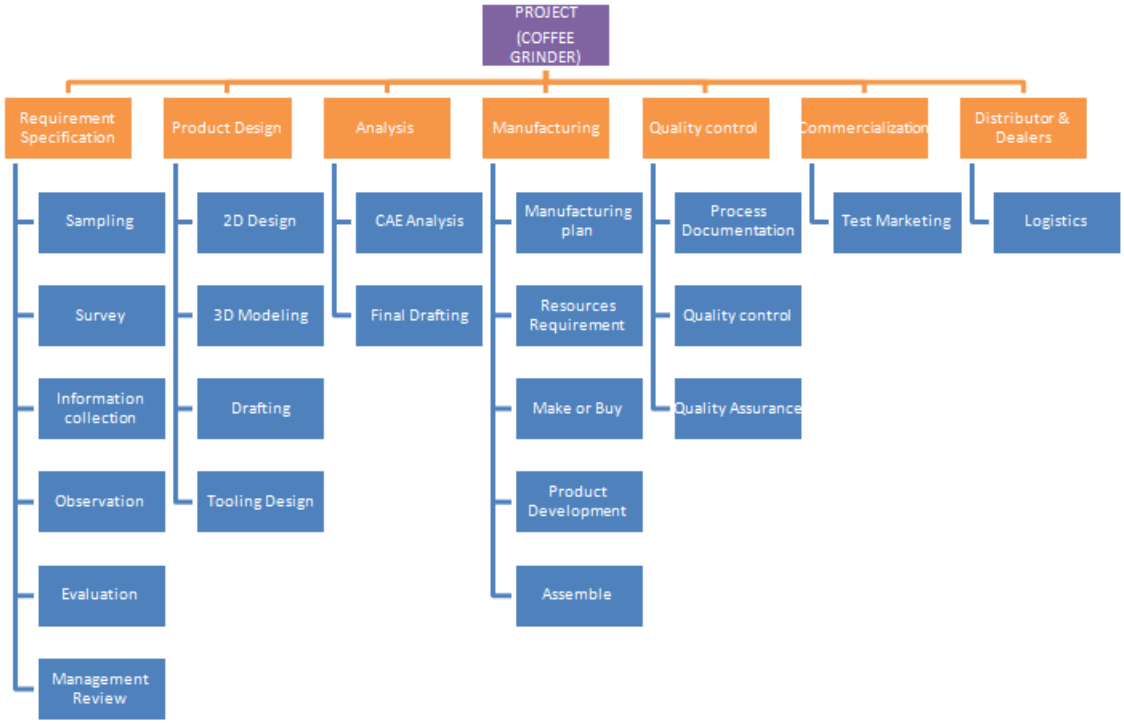

Figure 2: Work Breakdown Structure

0.6 Responsibility Matrix

Responsibility Matrix informs the organisation about its employees workload as it shows which role(s) are assigned to each person. For example, the organisation can see if someone has been placed in the responsible role too many times or not. In other words, does this person have a lot or a too few tasks to complete. That way, the organisation knows whether someone has too many or could take-on more responsibilities.

Figure 3 shows the responsibility matrix for this project. R in the Figure 3 stands for responsible which means the resource responsible for completing the work to achieve a task or make a decision. Only one resource is responsible for a task, but additional resource(s) are delegated to assist in completing the work (supported), which are marked as S.

OBS / WBS	Managing Director	Project manager	Research & Survey	Marketing team	Sales Team	Design & Development	Technical Team	Purchase & Supply	Quality controller	Finance & Auditor	Supervisor	Production Manager	Supplier	Sub contractor	Consultant
Requirement specification	S	S	R	S						S					
Product Design		S				R	S	S							
Analysis		S				S	R								
Manufacturing						S	S	S	S		S	R	S	S	
Quality Control		S					S		R		S	S			
Commercialization		S	S	R	S										
Distributors & Dealers		S		S						R					S

Figure 3: Responsibility Matrix

Gannt Chart

Gantt chart is a visual view of tasks scheduled over time. Figure 4 shows a Gantt chart on which you can see the start date of the project, what the project tasks are, who is working on each task, when tasks start and finish, how long each task will take, how tasks group together, overlap and link with each other and the finish date of the project. The critical paths are shown in red colour while the non-critical paths are shown in blue.

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	WBS
0		**Electrical Grinder**	**147 days**	**02-04-18**	**23-10-18**		
1		**Requirement specification**	**37 days**	**02-04-18**	**22-05-18**		**A**
2		Sampling	7 days	02-04-18	10-04-18		A.1
3		Survey	20 days	11-04-18	08-05-18	2	A.2
4		Information collection	15 days	11-04-18	01-05-18	2	A.3
5		Observation	12 days	11-04-18	26-04-18	2	A.4
6		Evaluation	5 days	09-05-18	15-05-18	3,4,5	A.5
7		Management Review	5 days	16-05-18	22-05-18	6	A.6
8		**Product Design**	**41 days**	**23-05-18**	**18-07-18**		**B**
9		2D design	10 days	23-05-18	05-06-18	7	B.1
10		3D modeling	12 days	04-06-18	19-06-18	9FS-2 days	B.2
11		Drafting	8 days	08-06-18	19-06-18	10FF	B.3
12		Tooling Design	11 days	04-07-18	18-07-18	14	B.4
13		**Analysis**	**29 days**	**20-06-18**	**30-07-18**		**C**
14		CAE Analysis	10 days	20-06-18	03-07-18	11	C.1
15		Final Drafting	8 days	19-07-18	30-07-18	12	C.2
16		**Manufacturing**	**79 days**	**23-05-18**	**10-09-18**		**D**
17		Manufacturing plan	11 days	23-05-18	06-06-18	9SS	D.1
18		Resource Requirement	13 days	07-06-18	25-06-18	17	D.2
19		Make or buy	10 days	26-06-18	09-07-18	18	D.3
20		Product development	20 days	31-07-18	27-08-18	15,19	D.4
21		Assemble	10 days	28-08-18	10-09-18	20	D.5
22		**Quality control**	**20 days**	**11-09-18**	**08-10-18**		**E**
23		Process documentation	5 days	11-09-18	17-09-18	21	E.1
24		Quality control	7 days	18-09-18	26-09-18	23	E.2
25		Quality Assurance	8 days	27-09-18	08-10-18	24	E.3
26		**Commercialization**	**15 days**	**31-07-18**	**20-08-18**		**F**
27		Test marketing	15 days	31-07-18	20-08-18	15	F.1
28		**Distributors and Dealers**	**10 days**	**09-10-18**	**22-10-18**		**G**
29		Logistics	10 days	09-10-18	22-10-18	25	G.1
30		End of project	1 day	23-10-18	23-10-18	29	H

Figure 4: Gannt Chart

Network Analysis

Network analysis is the method of planning and controlling projects by recording their interdependence in a diagrammatic form which enables each fundamental problem involved to be tackled separately. The objectives of network analysis are as follows:

- To minimize idle resources
- To minimize the total project cost
- To trade off between time and cost of project
- To minimize production delays, interruptions and conflicts
- To minimize the total project duration

The network diagram is always drawn from left to right to show the stages of the project. The tasks highlighted in red display the critical path, while the blue tasks are not on the critical path. The critical path is the shortest time path through the network. The nodes represent the start, the duration and the finishing of the individual task.

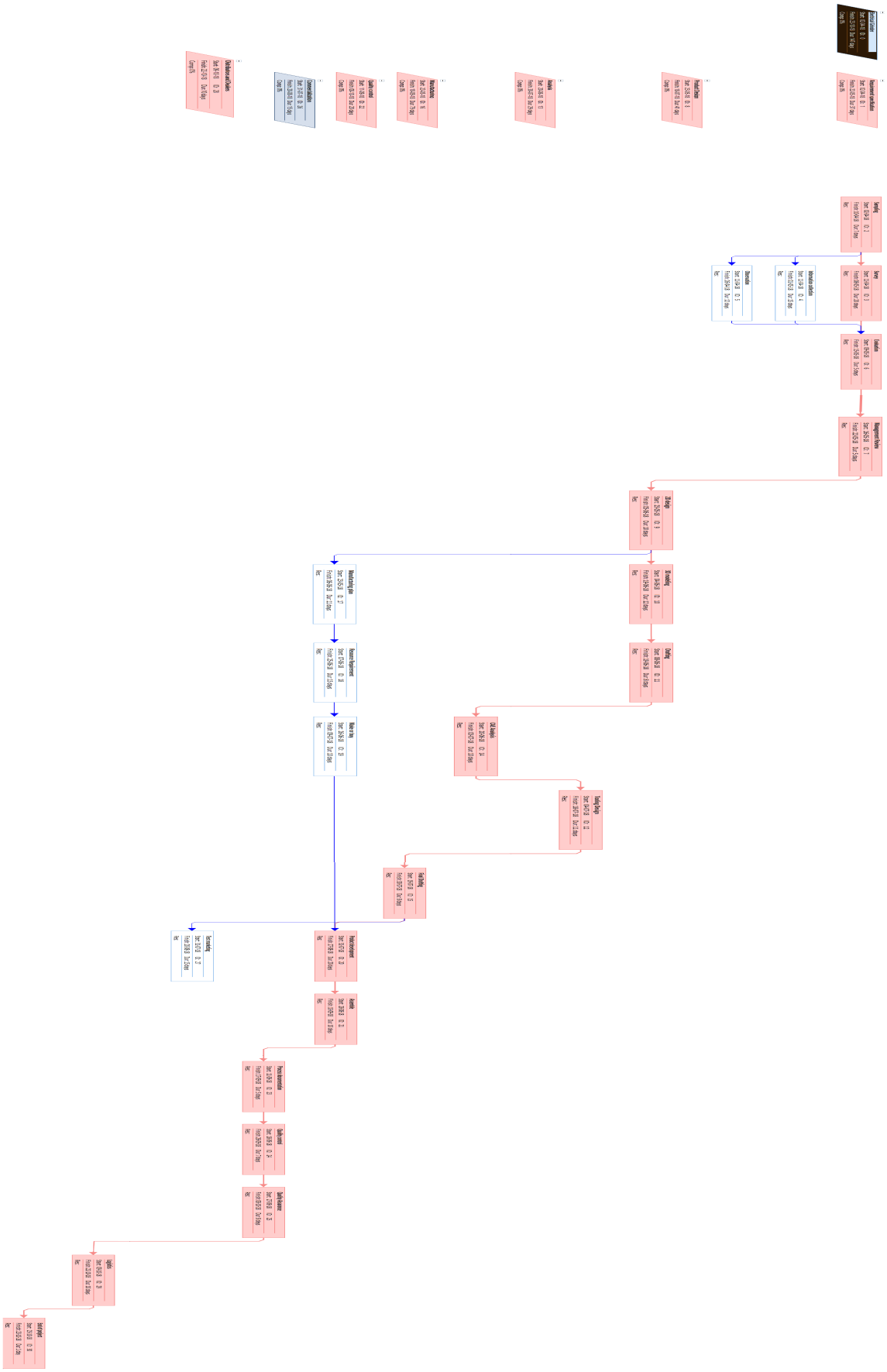

Figure 5: Network Diagram

Final Product

Lusso (Luxury in Italian) is a great grinder, with a speedy, durable burr set and consistent grinding performance. It looks and feels solid, it has a timer switch that makes it easy to grind the exact same amount of coffee each time you brew. It also has a sturdy base which helps keep burrs from vibrating out of calibration. Lusso will cost 199 Euro only.

Specifications	
Number of settings	40
Burr Type	Conical burr grinders
Compatible with	Both beans and pods
Warranty	1 year
Dimensions	12x35x16 cm
Grinding speed	450 RPM
Bean Hopper Capacity	8 oz (227g)
Weight	7 lbs. (3.1kg)
Power	AC Supply 110 V or 220-240V

Marketing

While the external manufacturing companies will be producing our products, we will attend to the marketing. One of the most effective and efficient marketing tactics to consider is a cross-marketing relationship with another brand. We could pair up with a fast food franchise. The franchise would use our coffee grinder and we could promote their brand by showing that it goes well with the coffee.

Setting up stalls in crowded malls is a good way of promoting a new product. Also, free coffee samples can be distributed and thus slowing customers down with free samples is a great way to introduce them to the product.

Every customer that checks the product is a marketing opportunity. This is because people talk, and people tend to trust friends and family more than they trust businesses. Influential bloggers in the area can start the buzz if shops give them an exceptional experience.

Take on small coffee shop accounts and grow with them.

Monitoring and Controlling

This process oversees all the tasks and metrics necessary to ensure that the approved project is within scope, on time, and on budget so that the project proceeds with minimal risk. This process involves comparing actual performance with planned performance and taking corrective action to yield the desired outcome when significant differences exist.

Being the Project Manager, I will execute the project management plans and continuously manage and evaluate the overall project performance to provide confidence that the project will satisfy the relevant quality standards. I should continuously utlize the performance reporting as a necessary process for collecting and distributing performance information. This includes status reporting, progress measurement and forecasting. Using the WBS, Responsibility Matrix and Gannt Chart, I know how long each task should take and who handles which part of the project, so I can make sure those things are getting done. Clear expectations throughout the project will be communicated which will help the team stay on track and thus make monitoring easier. Weekly monitoring will be scheduled and the team is also expected to show the progress of that week in the weekly meetings. These meetings will be kept short and to the point to make them as efficient as possible. These meetings would also let us solve problems that arise.

Conclusion

The main purpose of the project was to design an affordable coffee grinder which could be used for domestic as well as commercial use. The potential market demand for the product was assessed and feasibility studies carried out. Attention to detail as per the potential market requirement was considered whilst implementing the development of the product. The project is scheduled to commence from April 2018, tested and launched by October 2018 before the onset of winter just in time to meet the high demand for hot beverages.

Being the project manager, importance is given to feasibility and sustainability of the product resulting in success of the newly launched product. The core team was divided into various teams concentrating on product development, product implementation, marketing and after sales which is also instrumental in success of the product. The response from the potential buyers has been overwhelming even before the release of the product and are considering on variants and plans for expansion. The cost effective and customer centric product along with the market demand have shown potential return of investments and profits to the investors and the organization.

Bibliography

[1] Gannt Chart and Network Diagram was developed using Microsoft Project.

[2] Encore Manual - Coffee Grinder,

https://www.baratza.com/wp-content/uploads/2015/07/Encore-Manual-EN-v2.1-SS.pdf

[3] Understanding Responsibility Matrix

https://project-management.com/understanding-responsibility-assignment-matrix-raci-matr

[4] Project Management notes by Prof. David Ashworth, Denmark Technical University.

[5] Cross Marketing,

https://www.baerpm.com/blog/what-is-cross-marketing/