

Assessment of the Project Feasibility Study of Laundry Machine in Case of Shambu Campus of Wollega University

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Abstract

Laundry/washing machine facility is one of the service areas that students and other university community members would like to get nearby their campuses. Despite its old age and the high number of its community, Shambu campus of Wollega University has not yet availed laundry/washing machine service to its community members. This study investigates the economic and technical feasibility of installing a laundry/washing machine service in the Shambu campus of Wollega University. The project aims at solving the current problem that students face in washing their clothes which is crowded, time taking, tiresome, and inefficient. In addition, the project will generate additional revenue to the University itself or to the credit association of the university whoever is pursuing in the investment activity. The project is generally environmentally friendly and proper sewerage system will also be constructed to remove all waste produced in the business. Out of 1500 regular residing students of the Shambu campus, 270 were randomly selected to participate in the survey. 70% of the participant students have expressed that the service is important to them and are ready to pay a reasonable amount for the service. As most students have stressed their concern on the affordability of the service due care has been given to set a price which is fair and affordable to most of them. From a field survey of the price that janitors charge students and from the questionnaires distributed, a price of Birr 2.00 per kilogram seems affordable to the students and also acceptable to the investor. The total annual demand determined through the market survey is about 294179 kilograms of clothes. With respect to manpower, the project is not as such labor intensive. However, to safeguard mishandling and misuse of the machines and to provide efficient service, about seven employees are required in the project. Finally, the project requires the commitment of some resources for proper implementation. The university management has to look at the proposal and give consent on the implementation of the project. In addition, procuring the machines and equipment, installing the machines, constructing the building and other civil works, and many other activities require some time.

Keywords: Feasibility study, Laundry machine, Wollega University, Project

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INTRODUCTION

Service sector is seen to be the fastest growth sector in Ethiopia recently despite the decrease in nationwide economic. Since last year, this sector made a significant change to GDP contribution. Shambu campus of Wollega University which is witnessing the drastic climb in the number of university students every year is also the most important educational institutions in Ethiopia. However, the ones for students are still limited making it difficult to create the most advantageous environment for them to live and study (Hoa, 2013). Thus, if the business can provide a better service for students, the author strongly believe that the new business concept, laundry lounge where washing, drying, eating, studying can be done at the same time, might have a great opportunity for success in Ethiopian market. Despite the strict time schedule of studying and working, most students still have to wash clothes by hand themselves, which really takes time, energy and affects negatively to students' life. Consequently, the authors see an opportunity for a service that can help them save both time and energy. Instead of wasting time, a laundry lounge helps to save both time and energy as students can have breakfast, lunch or dinner, read some books or use free Wi-Fi to do their homework during the waiting time. Hence, this is an obvious opportunity for the students to start their own business with a laundry lounge as a pioneer in targeting shambu campus of Wollega university students. And the foremost thing needed to do is using feasibility analysis to determine if this prospective business is viable or not, and thereby, this project is born to explore the answer.

RESEARCH DESIGN AND METHODOLOGY

The primary data was gathered mainly from the regular resident students of the Shambu Campus of Wollega University and various officials of University. The secondary data sources included the registrar office and the dean of students of Wollega University, various web sites of laundry machine manufactures and articles on coin operated laundry business from the Internet. That is trustworthy sources with prestigious authors such as books, articles and journals, etc. are popular and actionable sources of secondary data. In this project, Primary and

secondary data were gathered to enhance the reliability and validity of the outcomes. Primary data is related to target group's behaviors in washing and drying their clothes as well as their perceptions and attitudes regarding laundry machine. Exploratory and applied business research is seen to be the nature of this project.

Although the student population is relatively homogeneous, the questionnaires were distributed to about 5% of the regular resident students i.e. 270 students, to make the predictions more accurate and reflective of the actual situation. In addition, some secondary data sources were also used to get relevant information in the areas of student population and the like.

The data that was gathered through the above mentioned methods was analyzed using various techniques. Statistical tools such as averages and extrapolation were used to predict average demand, average frequency of washing, capacity of machines and the like. Financial analysis and evaluation models namely Net Present Value (NPV), Internal Rate of Return (IRR) and Payback Period were employed to evaluate the project.

RESULT AND DISCUSSION

The main objective of the study was to assess the project feasibility study of laundry machine in case of Shambu Campus of Wollega University. This chapter focuses on the results and discussion based on the collected data from concerned sources. Generally, 270 questionnaires were distributed and all were returned. The following sections explain the results of finding of the study including the, feasibility analysis of proposed project using traditional and modern project evaluation mechanisms.

Market Analysis

The Business Climate

The arrangement of laundry/ washing machine Service is one of the student service areas that foreign colleges and universities give priority to attract students to their institutions. In our country the service has not so far received the attention of the management of the various universities. Although the university management does not totally undermine the importance of the facility, it however, has the opinion that there are other more critical services that must be availed to the students with the limited budget.

The student population on the other hand is showing an increase every year.

The increase in the number of student population demands the arrangement of efficient services to the students one of which is the arrangement of a laundry/washing machine service facility. The current manual washing facilities are assumed to be inefficient & ineffective in accommodating the needs of students in this area. This issue is verified by surveying the current facilities in the Shambu campus of Wollega University.

The project when implemented will be an entirely new service to the students. Currently, there are no private businesses within the environs of the Shambu campus which give such kind of service.

The project will not require any special raw material. The main operating cost components will be the water & electric power consumed. The government sets the prices of these important cost items and no sudden significant rate fluctuation that affects the operation of the business is expected.

The Market Area

The proposed business mainly targets the on-campus students of the Shambu campus of Wollega University. The business should therefore be located within the premises of the Shambu campus or in some other convenient place with in the vicinity of the Shambu campus.

There are about 1500 students who get dormitory services in the Shambu campus and who are expected to be potential customers of the business. In addition to the student customers, some of the administrative and academic staff of the university might be the users of the services of the facility.

Major Themes Arising from the Market Survey

A vast amount of detailed information was collected through questionnaires to facilitate the study. While all the data collected through the survey are essential, the following are some of the most important themes that emerge from the study.

1. Importance of installing a washing machine service
2. Willingness to pay
3. Satisfaction on current facility and continuity of service of the new facility.

Importance of Installing a Washing Machine Service

The students surveyed through the questionnaire expressed broad views concerning the installation of a laundry/washing machine service in the Shambu campus of Wollega University.

Out of a total number of 270 students, 210 i.e. 78% polled for the installation of this service in the University. Their reasons include:

- Students would have more time for academic activities
- Students would be able to wear their clothes for longer time without changing shape & color
- The students' clothes will be clean & hence will give them better looks.

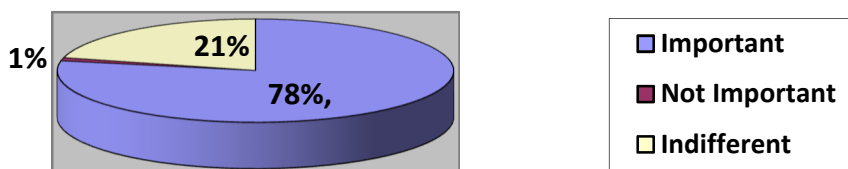
On the other hand only four students i.e. 1% who polled on the importance of the service expressed that the service is not necessary to the students. The reasons that these respondents emphasized include:

- The service may create Status difference between those students who use the facility and others who use the current manual system due to economic reasons.
- The installation of the service may cut the extra income that the janitors in the residence blocks earn by washing the clothes of the students.
- Other services such as additional residence blocks are much more important to them than a washing machine service which is not basic currently.

About 56 students i.e. 21% were not able to say something on the importance of the service for various reasons such as unfamiliarity to the nature of the service itself.

The following diagram shows the proportion of students who polled for and against the installation of a laundry service in their campus.

Figure .1 Importance of Laundry Service in Campus



Source: Market Survey, 2018

In general, there was a majority agreement that the laundry washing machine service is important for their academic causes & personal reasons as well.

Willingness to Pay

In the survey, the students were asked to express how much they could afford to pay for the washing service. Out of the total number of students who are willing to be users of the service the majority of them i.e. 60% agree that they have to pay a certain amount for the service and have expressed amounts ranging from Birr 2 to Birr 15 at a time as reasonable and affordable charge. About 63 students i.e. 30% have responded that they would be users of the service although they could not fix a price which they consider affordable. The remaining 21 students i.e. 10% of the students responded that they could not afford to pay any penny although they consider the service important.

The following table shows a summary of the responses of the students on this issue:

Table 1. Students Willingness and Ability to Pay for Service

Group	Number	Proportion out of users	Proportion out of total
Want to be user and pay Birr 2 or more for the service	126	0.60	0.47
Want to be user but cannot say on price	63	0.30	0.23
Want to be user but cannot Afford	21	0.10	0.08
Do not want to be user	60		0.22
Total	270	1.00	1.00

Source: Market Survey, 2018

The students were further asked to express the amount they currently pay to other service providers such as janitors for getting their clothes washed, if they are using such arrangements. About 50% of the students hire janitors to wash their clothes and pay fees ranging from Birr 0.35 to T-shirts to 1.00 Birr to jeans trousers. It may therefore be argued that 50% of the students have readily available money to expend on the service if it is available at an affordable price.

Satisfaction on Current Manual Facility & Continuity of the Proposed Service

This is another important point addressed by the students. The students were requested to give their comments on the performance & convenience of the current facility.

The responses of the students on this issue are summarized in the following table:

Table 2. Current Manual Facility Rating

Convenience Rating	Number of Students	Proportion
Very Good	10	0.037
Good	40	0.148
Fair	40	0.148
Poor	105	0.389
Very Poor	75	0.278

Source: Sample Survey, 2018

In general, a good majority of students have answered that the current facility is poor or very poor. They have strengthened this point by giving an additional comment that the current washing facility is causing severe hygienic problem to the students.

The other point which the respondent students emphasized in connection with the proposed business is that the machines might be misused & hence breakdown at any time damaging their clothes and at same time losing the continuity of a convenient service.

Demand Analysis

The demand for the services of the project comes from the student population of the Shambu campus, the administrative/support staff of the university, and the academic staff of the University.

The student population residing in the Shambu campus of the University number about 1500. The survey result obtained from a random sample of 270 students indicates that about 78% are willing to be users of the service if there is one in the University. Out of this total number who polled to be users about 189 students i.e. 70% of the total student population are ready to expend some money for the service.

The total demand can therefore be expressed by the total weight of the clothes in kilograms that these students will deliver to the laundry/washing service facility for washing during any given time such as day, month or year. This total demand of the laundry/washing service facility is affected by a number of factors including the following

- The number of times that a student washes his/her clothes
- The weight of the clothes that a student washes at a time
- The quality of the service and the efficiency of the service
- The price charged

The weight of clothes that the customers deliver for washing may greatly vary depending on the type of fabrics and texture. There are no as such standard weights universally accepted for clothes. However, industry experts and people who worked in the business for many years have tried to determine the average weight of clothes by type. The following is the average weight of selected clothes by type determined by these experts.

Table 3 Average Weights of Clothes

Description	Average Weight Per Unit (KG)
Trousers	0.35
Shirts	0.18
Sweaters	0.50
Jackets	0.75
Women's Dresses	0.35
Bed Sheets	0.35
Towels	1.00
Pajamas	0.45
Others (average)	0.35

Source: Small Business Development Resource, www.smeda.org.pk

The total expected demand of the project determined by considering the first two factors is shown in the following table:

Table 4 Expected Demand

A	Total Number of On-campus Students	1500
B	Expected Number of user Students (70%)	1000
C	Average Weight of Clothes Per Student in Kilograms ⁴	3.01
D	Average Frequency in a Month ⁵	2.60
E	Total Demand Expected in a Month In kilograms (B x C x D)	29417.90
F	Total Demand in a Year assuming 300 days work ⁶ in kilograms (E x 10 Months).	294179.00

Source: Market Survey, 2018

The effect of the last two factors in the total demand for the services of the facility is also significant. The quality of the washes and the time that the students save are factors that would positively contribute to the demand of this business. On the other hand, price of the service could be a major factor that reduces the number of students who use the facility.

The financial capacity of students is limited and a price which is affordable to most students must be determined. This issue was given due attention and students were asked to express the amount which they can afford to pay for the service every time they wash their clothes. The students have stated various figures ranging from zero (0) to Birr fifteen (15.00). A significant proportion of the surveyed students i.e. about 60% have indicated that they can afford a price around Birr 4.00 for a single wash of their clothes.

The demand for the service is expected to increase every year for various reasons

- More students will be aware of the benefits of the service and will become users
- Student enrollment increases every year and hence the demand for the service

Supply and Competitor Analysis

The proposed business is expected to fill the already existing gap in the Shambu campus of Wollega University. Currently, there is no service provider which is going to compete with the proposed business.

However, there is still the option of using the current manual facility. There are various reasons for this:

- 1) Price may be unaffordable
- 2) Machinery Breakdowns

In addition, other business people may start the same kind of business in the surrounding of the Shambu campus and direct competition may come. The business has therefore to be efficient and attractive in all dimensions i.e. time, cost, quality, and price to win the competition that may come later.

Marketing Strategy

The proposed business is an entirely new service to the student community of Shambu campus of Wollega University. The investor has therefore to do a good marketing job to convince students to be users of the service. A combination of the following marketing strategies should be used to attract more customers to the service.

Pricing Strategy

The service is going to be marketed to a student population whose financial capacity & purchasing power is limited. The price to be charged must therefore be affordable.

The price may initially be set at a level which covers operating costs plus some margin for the investor. A field survey was conducted to learn as to how many the janitors, who give manual wash services to students, charge their customers. The charge varies depending on the number of customers that a janitor has, the intimacy of the student and the janitor, the type of cloth and the like. The following are the average charges obtained from the survey.

Table 5 Price Charged by Janitors for Selected Clothes

Type of Garment	Charge/Unit in Birr
Jeans Trousers	1.00
Sweaters	0.75
T-Shirts	0.40
Jackets	1.00
Bed sheets	1.00

Source: Market Survey, 2018

The estimated annual variable operating and administrative cost of the project for the first year is about Birr 362,794.00⁷. The operation plan of the project shows that it will have total sales of 294179.00 kilograms of clothes in a year. The unit operating cost for the project will therefore be Birr 1.23 per kilogram. A price that covers this cost, plus a reasonable margin for the business shall be fixed.

Promotion

The investor must initially promote the product using brochures & flyers which are effective to reach the target market. The purpose is to make the students aware about the availability and benefits of the service. A continued promotional campaign using brochures may not be required since the information will be disseminated through word-of-mouth after a while. However, the project may still continue to use flyers to inform the student community about the care to the facility and the requirements to be customers to the facility. With regard to the promotional aspect, since the market is concentrated, word-of-mouth promotions are much more effective and efficient than other forms of advertisements.

Place

The service shall be located in a convenient and safe place to all users of the service. In addition sufficient waiting room with reading facilities must be arranged so that students who want to stay there until their clothes are washed can read.

Process

Process refers to the manner in which the services are delivered to the customers.

In the proposed project, the process shall be designed in an efficient and convenient manner so that the student turnout for the service will be high.

Sales Projection

The total expected sales of the project is determined by considering the current expected demand, a reasonable growth of demand every year and the capacity of the machines to be installed and the price per kilogram for the service.

Table 6. Sales Projections for First Year

A	Expected demand in a year (Refer section 2.4)	Kg.	294179.00
B	Projected capacity of 9 washers (Refer section 5.3.1)	Kg.	432000.00
C	Price per kilogram (Refer section 2.6.1)	Birr	2.00
D	Total sales for first year (A x C)	Birr	588,358.68

Source: Market, and Engineering & Technology Studies, 2018

Considering the increase in student population every year, which is about 15%, and the additional customers that will be attracted to the service form existing non-users, a reasonable sales growth of 10% is assumed.

The total annual expected sale of the project for the coming five years is therefore as shown below:

Table 7. Sales Projections for Five Years

Year	Total Weight in Kg.	Price/Kg.	Total Sales (Birr)
2018/19	294179.00		2.00588,358.68
2019/20	323596.90		2.00647,193.80
2020/21	355956.59		2.00711,913.18
2021/22	391552.25		2.00783,104.50
2022/23	430707.47		2.00861,414.94

Source: Market Study, 2018

Raw Materials and Supplies

The proposed business does not involve the transformation of physical raw materials to physical outputs. Accordingly, there are no specific raw materials that must be identified and held for further processing. However, the project still needs some supplies in order to deliver its much needed services to the student community.

The supply items that the project requires include detergents, electricity, water and telephone.

Detergents

In coin operated laundry business the users normally come with their own detergents of an approved type. However, the laundry shop may also hold various sizes of detergents for sale to those customers who do not go with their own detergents. In the case of the Shambu campus of wollega University laundry/washing machine service project, detergents of different size shall be held in stock for sale to students as per their requirements. The detergents must however be sold to the students at cost.

Industry reports show that on average one wash cycle for 20 kilograms of clothes consumes five medium size (200grams⁹) powder soap which costs around E Br 2.50.

The operational plan of the laundry facility shows that a machine will work about 8 cycles in a given day. The total powder soap that will be used by one machine in a day will therefore be forty (40) medium sized packets. The laundry/washing service facility may hold stocks of powder soap just enough for one month. The total powder soap requirement given the current capacity will therefore be 40 packets x 30 days x 2.5 per packet x 9 machines, which is about Birr 27,000.00 worth of detergents for nine (9) washing machines.

Electricity Supply

The washing & dryer machines to be installed are electric power driven. The rate of electric power consumption of washing and drying machines may slightly vary from one to another machine.

The machines which are supplied by OMEDAD PIC & which are selected as the only heavy-duty commercial/industrial coin machines in the country have a consumption rate of 12.5 KWH

The machines require a 230/30/50-60 electrical system which is available and supplied by the Ethiopian Electric Power Corporation. The corporation charges Birr 9,000.00 for installing kilowatt-hour meters.

The operation program of this project indicates that the machines will operate for 8 hours in a day.

The total energy consumed by the washing and dryer machines will be 12.5 times the total number of hours of operation, which is shown below:

Table 8 Electricity Consumption of the Project

Electricity consumption of one machine	KWH	12.5
Number of hours that a machine operates in a day	Hours	8
Total Number of Machines		
Washers		9
Dryers	Units	3
Total Electricity consumed per day	KW	1200
Total Electricity consumption per year	KW	360000

Source: *Engineering & Technology Study, 2018*

At the current rate of the Ethiopian Electric Power Corporation the total expense for this category will be 360000 x 0.69 Birr, which is Birr 248,400.00 per year.

Water Supply

The washing machines have to be connected to a continuous pipe water system. The machines will automatically regulate the flow and disposal of the water.

The water consumption rate of the selected machines is 200 litres at rated capacity for one standard load of 20 kilograms of clothes.

The water supplier is the Shambu City Water and Sewerage Authority (ShWSA) and initially charges Birr 5,000.00 for water meters and related accessories.

The total estimated annual expense for water is determined as follows.

Table 9. Water Consumption of the Project

A	Water consumption for one full load per machine	Litres	200
B	Number of cycles /loads that a machine operates/day	Cycle	8
C	Number of cycles/ standard full loads in a year by one machine	11 Cycle	2400
D	Total number of machines	Pieces	9
E	Total consumption in a year (A x C x D)	Litres	4320000
F	Rate per litre charged by ShWSA	Birr	0.0035
G	Total Expense in a year (E x F)	Birr	15,120.00

Source: *Engineering & Technology Study, 2018*

¹⁰ Tariff charged by Ethiopian Electric Power Corporation for Business Customers

¹¹ Number of Cycles in a day multiplied by total number of operation days (300 days)

Telephone Facility

Two fixed telephone lines are required in the laundry room to facilitate the delivery of the service.

The telephone lines are to be obtained from the Ethiopian Telecommunication Corporation. The Corporation charges a onetime subscription fee of Birr 300.00 per line. The total one time subscription fee for two lines will therefore be Birr 600.00. The monthly expense for telephone is estimated to be 150 per month, which makes the annual expense as Birr 1,800.00.

LOCATION, SITE AND ENVIRONMENT

Location and Site

Proximity to customers is one of the main factors which influence the choice of location for a project.

The proposed project focuses on solving the problems of students residing in the Shambu campus of Wollega University. The project could therefore be located either within the premises of the University or in the surrounding areas of the university campus.

The students who are going to be the important customers of the project should have an easy access to the service. The selection of a particular site also considers the convenience of the laundry shop to the students. The project aims to attract as many students as possible to the service. This goal of the project would best be achieved if the laundry/washing machine service facility is installed in a convenient site within the premises of the University.

The physical plant development office of the University has recommended the open space near the residence block of foreign students (Block 505 in the site plan) as a suitable site for the project.

We have observed from my discussion with some officers of the University that they consider the project as important and are optimistic that the University Administration would render all the required cooperation. I have, therefore, selected the spot recommended by the physical plant development office of the University as the site of the project.

Environment

The project is an environmentally safe project. The machines are operated by electric power and do not produce any toxic waste that would pollute the surrounding environment. The soap and wastewater will be automatically dispensed to a proper sewerage system.

In addition, the installation of the service in the University would positively contribute in the reduction of waste & pollution around the dormitories of students. The compartments currently used by students are polluted by wastewater flowing out of the washing facilities. This situation would significantly improve when a substantial number of students move to using the laundry/washing machine facility.

Auxiliary Equipment

The project also requires auxiliary tools and equipment. The following is the list of auxiliary equipment required in the project.

Table 10. List of Auxiliary Equipment

Description	Number	Cost/unit	Total
Fire Extinguishers	2	650.00	1,300.00
Scale	1	35.00	35.00
Fan	3	250.00	750.00
Trolley	3	100.00	300.00

Source: Engineering & Technology Study, 2018

Office Furniture and Equipment

Furniture and equipment are also required in the laundry/washing service room for proper delivery of the service. The following items are initially required.

Table 11. List of Office Furniture & Equipment

Description	Number	Cost/unit	Total
Table (Office)		3500.00	1,500.00
Chair (Office)		3300.00	900.00
Folding Table		2700.00	1,400.00
Guest Chairs		10100.00	1,000.00
Computer with Printer		15,000.00	5,000.00
Miscellaneous		500.00	500.00

Source: Engineering & Technology Study, 2018

Building and Civil Works

The laundry/washing machines must be permanently installed in a flat-cemented area. The building must be ventilated & room temperature must be kept between 10⁰c and

40⁰c. Building constructed with hollow cement block (HCB) is ideal for the project. The eclectic power & water supply system shall also be performed simultaneously as per standards. The machinery will be arranged in such a way that there is enough space for equipment, for working, for passage & equipment servicing, and for adequate ventilation. The average space requirement of the building used for such service is about 92.9¹² square meters (M²).

At the current construction cost rate of Birr 1250¹³ per square meter, the total amount required for building & other civil works of the project will be about Birr 116,125.00.

Capacity and Operation Process

Capacity

The project aims at giving efficient laundry/washing machine service to the community of Shambu campus of Wollega University. It must therefore have the required capacity to satisfy the huge potential demand. The manufacturer and the local distributors of the machines advise that the machines should be operated for not more than 8-10 hours in a day. Hence, this study assumes that the laundry facility will operate a normal working day of 8 hours. The proposed capacity of the project is as shown below

Table 12. Project Capacity

Working hours per shift	8 hours
Number of shifts in a day	1 shift
Working days per annum	300 days
Weight of clothes washed & dried per load	20 Kilograms
Hours required per load	45 minutes
Cleaning time between processes	15 minutes
Total hour used per load	1.00 hour
Number of loads per shift in one machine	8 loads
Maximum weight of clothes washed & dried/day	8 x 20 =160 Kgs
Total demand expected per day in kilograms ¹⁴	1396.20
Number of washing machines required to meet demand ¹⁵	9 units
Total weight of clothes washed & dried in a year on 9 Machines	160 x 9 x 300 = 432000 Kgs.

Source: Market, and Engineering & Technology Studies, 2018

¹⁴ Total number of students multiplied by average frequency multiplied by average weight of clothes washed by a student divided by number of days in a month (30) i.e. $(1500 \times 3.01 \times 2.6) / 30$

¹⁵ Daily demand divided by daily full load wash capacity of one machine (160 kgs) rounded to the next whole number

Regarding the number of dryers required in the facility, industry reports show that one dryer can handle two wash loads and at the same time takes only one third of the time that a washer takes for one load. A professional advise obtained from OMEDAD plc also stresses this point and recommended the installation of three 15-kilogram dryers to handle the wash loads of the nine washing machines.

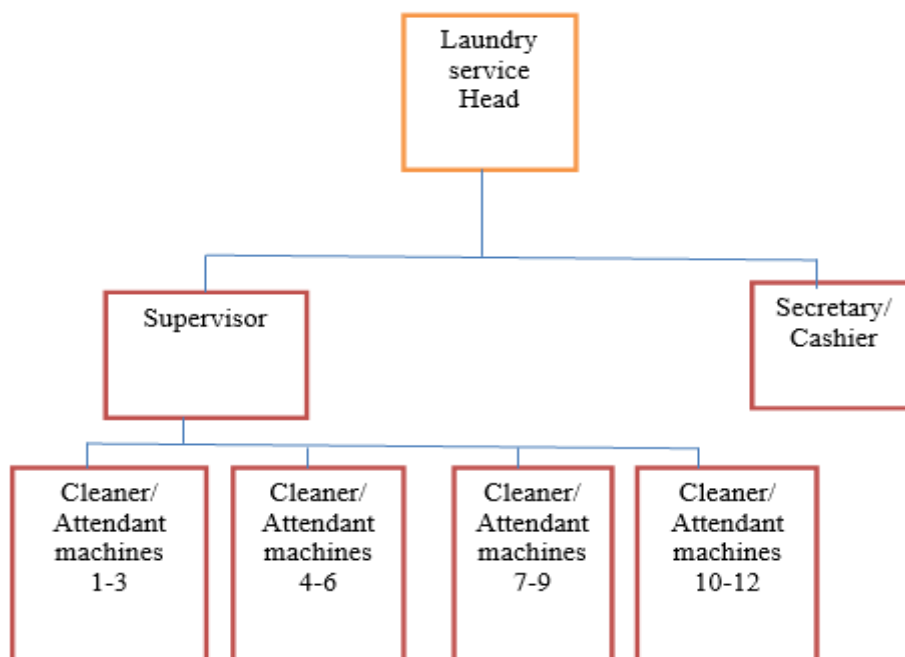
Operation/Washing Process

The washing service involves a sequence of flow of separate activities. In the washing process, powder soap is added to the machine and the machine rotates clothes in a manner similar to domestic washing machine to remove dirt, oil and stains. Once clean, the clothes are then transferred to a dryer. The following are steps:

- ✚ Receive- The laundry shop receives the clothes of the students
- ✚ Weighing- The weights of the clothes of the customers are measured to determine what the customer should pay.
- ✚ Payment- The customer pays the amount determined and presents the receipt to the attendants.
- ✚ Tagging- the clothes of each customer are tagged with a specific number to facilitate identification & delivery after washed and dried. The clothes will also be separated as per color & fabric texture to avoid damages.
- ✚ Washing- The clothes will then be washed using powder soap
- ✚ Drying- The washed clothes will be manually transferred to a dryer machine.
- ✚ Sorting & Delivery- The clothes are sorted as per the tag number previously assigned and then delivered to the customer.

ORGANIZATION AND OVERHEADS

The final organizational structure of the proposed project depends on the management style and control techniques of the investor in the business. Assuming that the Shambu campus of Wollega University administration is interested to run the project incorporating it under its organizational setup, a structure for this particular division is recommended as follows.



The overheads of the laundry/washing machine service facility include insurance charges, depreciation expense amortization expense and repair and maintenance charges.

The estimated overhead expenses for this project are

- Amortization - Birr 3,500.00
- Depreciation - Birr 108,703.00
- Insurance - (0.2 % on Property Value)
- Repair & Maintenance - (1% of fixed investment cost)

HUMAN RESOURCES

The Coin-operated laundry business is usually run as a self-service business in most countries abroad and no manpower might be required. However, in our case, the project is planned to be staffed with key essential personnel to ensure proper handling of the machines, protect theft of clothes and misuse of facility, and to provide efficient continued service.

The proposed manpower requirement of the project is as follows:

Table 13. Manpower & Salary Schedule

Position	Number	Monthly Salary	Annual Salary
Laundry Service Head	1	650.00	7,800.00
Shift Supervisor	1	450.00	5,400.00
Secretary/Cashier	1	450.00	5,400.00
Cleaner/Attendant	4	300.00	3,600.00
Total	7	1,850.00	22,200.00

Source: Market/Field Survey on Laundry Staffing, 2018

IMPLEMENTATION PLANNING AND BUDGETING

Implementation of the project requires the commitment of financial and time resources. The major activities of the project which involve a clearly identifiable finance & time resource are listed below. The time schedule is determined by being optimistic on the various conditions affecting implementation. In addition, the figures are estimated figures and variations may arise during actual implementation.

FINANCIAL ANALYSIS AND INVESTMENT APPRAISAL

This chapter of the feasibility study will focus on summarizing and evaluating the financial aspects of the project. The evaluations in this chapter will help the potential investors of the project to make objective investment decisions.

Analysis of Cost Estimates

The major cost items involved in this project are described in the topics from chapter one to nine of this feasibility study report. The summary of these items is presented below for easy reference and visualization of the situation.

Fixed Investment Cost

The fixed investment of the project includes the following items:

Table 15. Fixed Investment Cost Schedule

Description	Amount In Birr
Building & Civil Works	116,125
Machinery Equipment	998,000.00
Auxiliary Equipment	2,835.00
Office Furniture	6,400.00
Computer & Accessories	5,000.00
Total	1,128,360.00

Source: *Engineering & Technology Study, 2018*

Pre-Operation Expenditures

This group includes all items that are incurred prior to commercial operation of the project. The items included in this cost category are the following:

Table 16. Pre-Operation Expenditure Schedule

Description	Amount In Birr
Feasibility Study Cost	11,000.00
Architects & Survey Fee	5,000.00
Other Project planning costs	1,500.00
Total	17,500.00

Source: *Result of the Project Proposal and Implementation Studies of the Project, 2018*

Fixed Assets

The fixed assets of the project will be the sum of fixed investment costs and pre-operation expenditures described below:

Table 17. Fixed Asset Schedule

Description	Amount In Birr
Fixed Investment Costs	1,128,360.00
Pre-Operation Expenditures	17,500.00
Total	1,145,860.00

Source: *Engineering & Technology, Implementation Study and Feasibility Study Costs, 2018*

Inventory

The only inventory item the project requires to hold in stock is some amount of detergent that will be sold to customers at cost. The total amount of detergent required as determined in the operation plan of the project is Birr 27,000.00, which is just enough for one month when the project operates at full capacity.

Accounts Receivable and Accounts Payable

The laundry/washing machine service facility provides service to customers who pay the prices determined as per the total weight of clothes in cash. Therefore there will not be any accounts receivable entry in the statements of the business. Regarding accounts payable, the business has to pay salaries and utilities at the end of every month. These cost items can be covered from the revenue of the business. However, the expenses for the first month are included in the working capital requirement of the project which has to be provided by the investor. The account payable amount when the project operates at full capacity will therefore be as follows:

Table 18. Accounts Payable Schedule

Description	Amount in Birr
Wages	1,850.00
Water Charges	1,260.00
Electricity Charges	20,700.00
Telephone Expense	150.00

Source: *Material Requirement Study, 2018*

Net Working Capital

As mentioned above, the project does not require huge working capital to start its operation. However, sufficient funds which can cover the following cost items must be available until the business is able to finance from its own revenue. This time is assumed to be the first month of operation.

The working capital requirement of the project is therefore for those items which must be paid during/or at the end of the first month of operation.

Table 19. Net Working Capital Schedule

Description	Amount In Birr
Detergents Cost	27,000.00
Office Supplies	1,000.00
Prepaid Insurance	2,260.00
Marketing Costs	1,200.00
Cash In hand (5% of total of other Working capital)	2,500.00
Payment For Salaries	(1,850.00)
Payment For Utilities	(22,110.00)
Net Working Capital Required	10,000.00

Source: *Marketing, Material Requirement, and Engineering & Technology Studies, 2018*

Total Investment Costs

The Total Investment cost of this project will be the sum of fixed assets and net working capital of the project. This cost item is a summary of all of the above individual cost items and is also termed as total project cost.

Table 20. Total Investment Schedule

Description	Amount In Birr
Fixed Investment Costs	1,128,360.00
Pre-Operation Expenditures	17,500.00
Fixed Assets	
Net Working capital	10,000.00
Total Project Cost	1,155,860.00

Production Costs

Production costs are those types of cost that are incurred by the business once it is in operation. Production costs are normally divided into four major categories: ¹⁶Factory Costs (Direct Operating Costs), Administrative Overheads, Depreciation Costs and Financial Costs. The production costs of the current project are as follows:

Direct Operating Costs

Direct operating costs include material (utilities) and labor costs required for the operation process of the business. The estimated direct operating costs of the project when it operates at full capacity are as follows:

Table 21. Direct Operating Cost Schedule

Electricity Costs	248,400.00
Water Costs	15,120.00
Telephone Costs	1,800.00
Labor	22,200.00
Total	287,520.00

Source: *Marketing, and Engineering & Technology Studies, 2018*

Administrative Overheads

The most important cost items included in administrative overheads are insurance charges, repair and maintenance costs and office supplies.

Table 22. Administrative Overheads Cost Schedule

Insurance Charges	2,260.00
Repair & Maintenance	11,284.00
Office Supplies	1,000.00
Total	14,544.00

Source: *Organization and Overheads Study, 2018*

Financial Costs

The project is assumed to be financed with 100% equity contribution. There are many reasons for this assumption

- 1) The project aims at giving a basic service which most universities must avail to their students. The officers of Wollega University have a positive attitude to the availability of this service and are willing to see the possibilities of financing the project
- 2) The Credit Union of the University staff which provides many services to the community at discounted prices may be interested to venture from its own funds.
- 3) Private business organizations or individuals may be interested in the business and may require some amount of loan from banks. However, since the site is selected to be within the premises of the Shambu campus, it will be difficult for entities outside the university to operate a business within the university.

Depreciation Costs

The total project cost has to be depreciated or amortized as per applicable laws. The depreciation costs of the project are determined as per the following assumption:

- ✚ Buildings & Civil Works will be depreciated over a 20-year period
- ✚ Machinery and Auxiliary Equipment are depreciated over a 10-year period
- ✚ Office Furniture and Equipment are depreciated over a 5-year period
- ✚ Computers are depreciated over a 4-year period
- ✚ Pre-Operation expenditures are amortized over a 10-year period.

The total depreciation and amortization cost of the project is as follows.

Table 23. Depreciation Cost Schedule

Description	Total	Annual Depreciation
Building & Civil Works	116,125.00	5,806.25
Machinery & Accessories	998,000.00	99,800.00
Auxiliary Equipment	2,835.00	567.00
Office Furniture	6,400.00	1,280.00
Computers	5,000.00	1,250.00
Pre-Operation Expenditures	17,500.00	3,500.00

Source: Determined by applying the depreciation rules on various costs stated under section above

Marketing Costs

The investor in the project has to do a proper marketing job in the first year of its operation. The cost will be incurred every year throughout the life of the project although not in a direct marketing sense. The rationale for this expenditure after the first year is that the materials will be used as teaching aids about the use of and care for the facility. The amount involved as determined under section 2.7.4 is Birr 1,200.00.

Financial Statements

The basic financial statements of the project for the next five years i.e. Projected Income Statement, Projected Balance Sheet and Projected Cash Flow Statement.

Investment Appraisal

As far as the investor in a business is concerned, the investment criterion overruling all other project related business objectives is the financial feasibility of an investment project. This means that the financial return on total invested capital must be sufficiently high. Although sufficient returns are essential for a project to be approved, investments must be justified usually within a wider context, which for investors and financiers include any gains, whether net profits or non-cash benefits, resulting directly or indirectly from an investment. In the case of this project, since the financing plan is not sophisticated, the following appraisal methods are almost sufficient to guide the final decision of pursuing on the project or not.

Net Present Value (NPV)

The net present value of a project is the value obtained by discounting, at a constant interest rate and separately for each year, the differences of all annual cash outflows and inflows accruing throughout the life of the project. The general rule is that projects with positive net present value are acceptable. The net present value of this particular project discounted at 7.5% is Birr 2,207,108.19. The figure for this project is positive which indicates that the project is worth investing.

Internal Rate of Return (IRR)

The internal rate of return is the discount rate at which the present value of cash inflows is equal to the present value of cash outflows. It is the discount rate at which the present value of the net receipts from the project is equal to the present value of the investment, and the net present value is zero at this point. The usual criterion is that an investment proposal may be accepted if the internal rate of return is greater than the cut-off rate (the cost of capital plus any margin for risk), which is the lowest acceptable interest rate for the invested capital. The cut-off rate applied in this project is 7.5% which is the interest rate paid by commercial banks for large sums of money in time deposits. Using this criterion the project under study is acceptable since it has an internal rate of return of 39%.

Payback Period

The payback period is the length of time that a business will take to recover the original investment outlay through the accumulated net cash flows. The project takes less than three years to pay off all the total outlay. The time required is so short which implies that the project is an acceptable investment.

Sensitivity Analysis

The effect of changes in the most important variables namely changes in the price to be charged per kilogram of clothes washed and dried, and changes in the major cost items (cost of electricity and water) on net cash returns. The purpose of this analysis is to see if the project is still worth investing if prices are revised down to accommodate more students and at the same time if the cost of the major inputs is increased by the providers of the service. This situation is analyzed based on the following assumptions.

- 1) Price is assumed to be reduced by 25% to be Birr 1.50 per kilogram
- 2) The charge per kilowatt-hour of electricity is assumed to be increased by 10% on various levels.
- 3) The charge on water is assumed to increase at 5% since we are already at the maximum charge recommended by the water and sewerage authority.
- 4) The effect of these changes is analyzed when the project operates at full capacity.

The effect of such a major change has to be seen in light of long-term consequences of the changes, which in this case happens when the project operates at full capacity.

The investment decision criteria that are used to evaluate the project indicate that the project is still acceptable with changes in the variables that have huge financial impact.

CONCLUSION

The arrangement of laundry/washing machine services by universities is believed to contribute highly to the achievement of their mission. Wollega University has not so far arranged this facility to the students and staff in any of its campuses. The absence of such facility has affected the students in particular since they have to allocate part of their active time to wash their clothes in the current manual facility which is time taking, tiresome, and inefficient. The majority of the students of the Shambu campus have asserted the importance of the installation of laundry/washing machine facility by stating that the issue is now becoming a health concern in addition to the usual problems outlined previously. The student population of the university is growing every year increasing the pressure on the current system and aggravating the problems. This feasibility study report has investigated the possibilities of installing a laundry/washing machine service facility in the Shambu campus of the university. The study has assessed the marketing aspects, the technological aspects, the resource requirements, the organization and management aspects of the project, and the financial commitments and rewards of the project. The project has been evaluated in terms of the return that it generates to the investor, the present value of the future cash flows of the project expected throughout the project life and the number of years that the project takes to pay back all the initial investment made on the project. The project is found acceptable by all of the above evaluation criteria. The impact of changes on the project has also been assessed and the project is still feasible using the above appraisal methods.

RECOMMENDATIONS

The following points are recommended to the university management in connection with this project:

- ❖ The university management should consider the service as basic and must render all the required assistance for the implementation of the project
- ❖ The university is specifically recommended to invest in the project since the revenue generated from the business helps the university to cover part of its expenses from its own sources.
- ❖ After implementation of the project, proper care and maintenance shall be given to the machines to ensure the continued availability of the service.
- ❖ The university management may discuss with the Credit Association of the University on ways of financing the initial investment.

REFERENCES

- Allen, K., R. 2010. *New Venture Creation*. revised edition. Canada: Cengage Learning.
- Barringer, D., R. & Ireland, R., D. 2012. *Entrepreneurship: Successfully Launching New Ventures*. revised edition. New Jersey: Prentice Hall.
- Bell, J. 2010. *Doing Your Research Project*. revised edition. Maidenhead: Open University Press.
- Brush, C., G. Manolova, T., S. & Edelman, L., F. 2008. Properties of Emerging Organizations: An Empirical Test. *Journal of Business Venturing*, 23 no. 5: 547–66.
- Bryman, A. & Bell, E. 2011. *Business Research Methods*. revised edition. New York: Oxford University Press.
- Bulmer, M. Sturgis, P., J. & Allum, N. 2009. *Secondary Analysis of Survey Data*. Los Angeles: Sage, pp. xviii-xxvi
- Burgess, R., G. 1984. *In The Field*. London: Allen & Unwin
- Burns, P. 2011. *Entrepreneurship and Small Business: Start-up, Growth and Maturity*. revised edition. London: Palgrave Macmillan
- Butler, D., F. 2014. *Business Planning for New Ventures*. New York: Routledge. Cooper, D., R. & Schindler, P., S. 2008. *Business Research Methods*. Revised edition. New York: McGraw-Hill/Irwin.
- DeVaus, D., A. 2002. *Survey in Social Research*. revised edition. London: Routledge.
- Do, L. & Phan, T., M., H. 2002. *Collectivism, Individualism and "the self" of the Vietnamese Today*. Hanoi: Chinh Tri Quoc Gia Publisher.
- Donald, M., J. 2011. *An Investor Guide to Coin Laundry. Alliance Laundry Systems*. "Coin Laundries – Road to Financial Independence: A Complete Guide to Starting and Operating a Profitable Self-Service Laundries"

- by Emerson G. Higdon
- Eriksson, P. & Kovalainen, A. 2008. *Qualitative Methods in Business Research*. London: SAGE Publications Ltd.
- Ghauri, P. & Grønhaug, K. 2010. *Research Methods in Business Studies*. A Practical Guide. revised edition. Harlow: FT Prentice Hall.
- Hill, C. & Jones, G. 2008. *Essentials of Strategic Management*. Canada: Cengage learning.
- Horton, J. 2010. *Strategy 2.0 Innovating: How We Develop and Execute Strategy*. MHD Supply Chain Solutions, 56-59
- Humphrey, A. 2005. *SWOT Analysis for Management Consulting*. SRI Alumni Newsletter.
- Ireland, R., D. & Hoskisson, R., E. & Hitt, M., A. 2012. *Understanding Business Strategy*. revised edition. Cincinnati: South-western Cengage Learning.
- Katz, J., & Green, R. 2014. *Entrepreneurial Small Business*. revised edition. New York: McGraw-Hill/Irwin
- Kotler, P. & Keller, K. 2012. *Marketing Management*. revised edition. New Jersey: Prentice Hall.
- Lumpkin, G., T. 2011. From Legitimacy to Impact: Moving the Field Forward by Asking How Entrepreneurship Informs Life. *Strategic Entrepreneurship Journal*. 5, no. 1: 3–9.
- Marshall, G., W. & Johnston, M., W. 2010. *Marketing Management*. New York: McGraw-Hill/ Irwin.
- Mattiske, C. 2011. *Understanding customer motivation*. Australia: The Performance Company Pty Ltd.
- Mazzarol, T. 2008. *Small Business Management*. Australia: Tilde Group.
- Mullins, J. 2003. *The New Business Road Test*. London: Prentice Hall.
- Porter, E., M. 1979. How Competitive Forces Shape Strategy. *Harvard Business Review* 57, no.2: 137-145
- Saunders, M., Lewis, P. & Thornhill, A. 2012. *Research Methods for Business Students*. revised edition. Pearson Education Limited
- Scarborough, M., N. 2014. *Essentials of Entrepreneurship and Small Business Management*. revised edition. Harlow: Person Education Limited
- Shepherd, D., A. & Patzelt, H. 2011. *The New Field of Sustainable Entrepreneurship: Studying Entrepreneurial Action Linking ‘What Is to Be Sustained’ with ‘What Is to Be Developed,’*. *Entrepreneurship Theory and Practice* 35, no. 1: 137–63;
- Suddaby, R. 2006. What grounded theory is not. *Academy of Management Journal*. Vol. 49, No. 4. pp. 663-43
- Wang, C., J. & Wu, L., Y. 2011. Team Member Commitments and Start-Up Competitiveness. *Journal of Business Research*: in press.
- William, M., L. 1982. Concept Testing. *Journal of Business Research* 10, 279-294