CHAPTER 2

2.1 CANVASES

2.1.1 Ideation Canvas

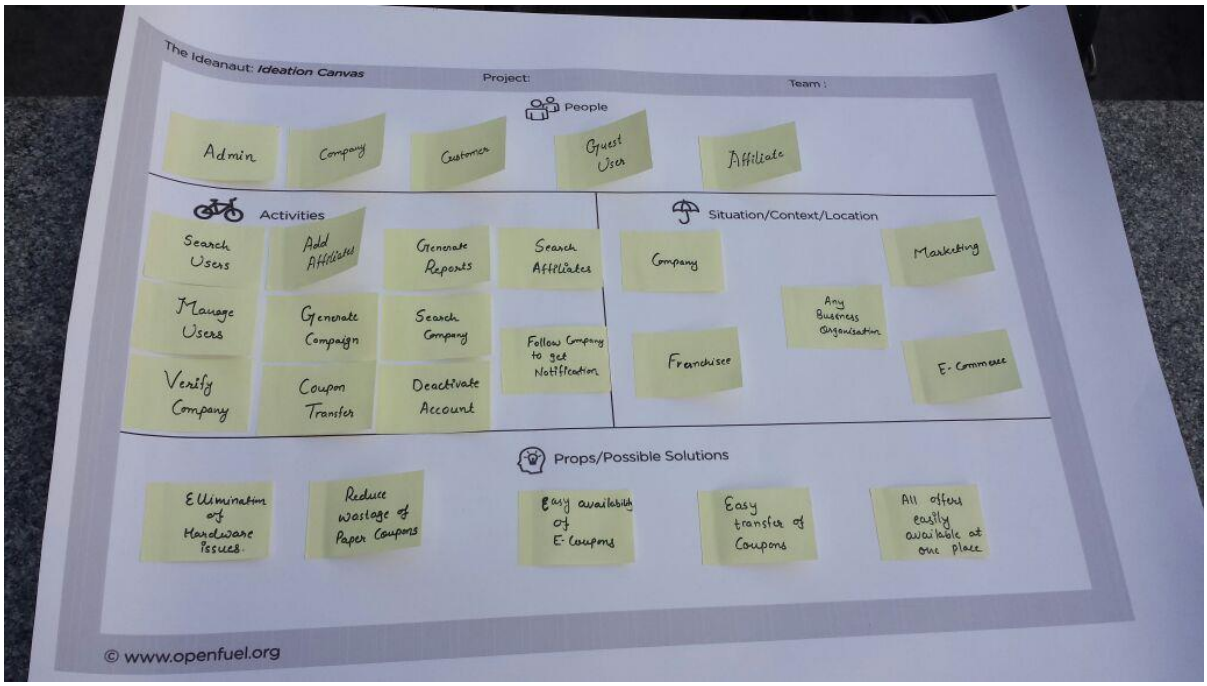

Fig. 2.1 Ideation Canvas

Ideation canvas is basically representing the set of ideas we had for our project. We decided on who all will use the project and who all are related, then the activities on how the project flow will happen, then locations that is where all the project will e located and where it will be used. The solutions are not the exact solutions but the possible set of solutions which may be the best for the project.

2.1.2 Observation Matrix

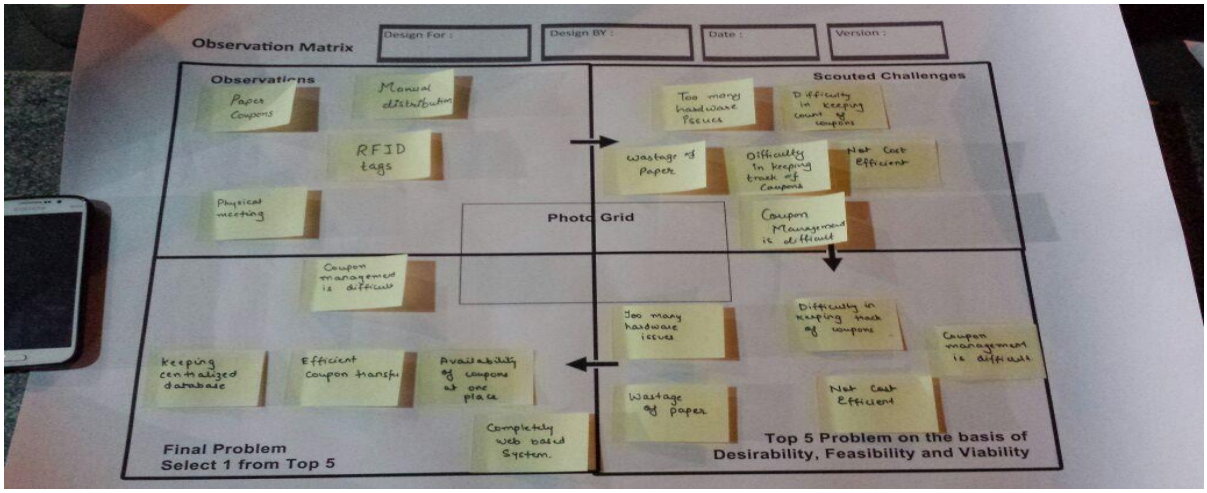

Fig. 2.2 Observation Matrix

2.2.3 Idea Funnel Canvas

The observation matrix focuses on the solving and reaching to conclusion of a problem. The existing system problems are taken into account and a brief explanation and justification is provided as to why the system we designed is best for the working.

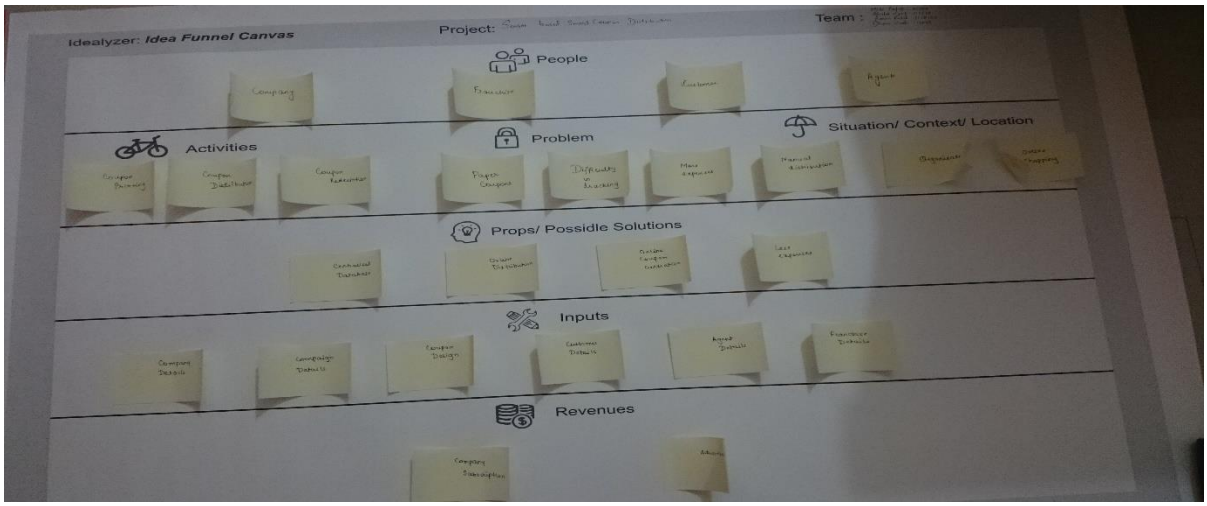

Fig. 2.3 Idea Funnel Canvas

This canvas is divided and correlates all the necessary aspects of the project. It is similar to the ideation canvas but it is more refined and to the point. Ideation is a first step and then after further analysis idea funnel is created.

2.2 METHODOLOGY

2.2.1 Project Development Approach and Justification (SDLC Model)

We are following Spiral model for developing our system. The **Spiral model** is a risk-driven process model generator for software projects. Based on the unique risk patterns of a given project, the spiral model guides a team to adopt elements of one or more process models, such as incremental, waterfall, or evolutionary prototyping. Spiral model combines the advantages of top-down and bottom-up concepts.

Also it is reasonable to use the spiral model in projects where business goals are unstable but the architecture must be realized well enough to provide high loading and stress ability. For example, the Spiral Architecture Driven Development is the spiral based SDLC which shows the possible way how to reduce a risk of non-effective architecture with the help of spiral model in conjunction with the best practices from other models.

Hence, we are using this model due to its following reasons:

- The creation of prototype is suitable for the project and describing the characteristics with high priority first, we will develop a prototype based on these. As our system needs continuous development, this prototype will be tested and desired changes will be made in the new system. This continual and steady approach will minimize the risks or failure associated with the change in the system.
- We will be developing the system in small segments that will make it easier to do cost calculations.
- If the risk evaluation and cost evaluation is important for the project, and hence we are using the Spiral model as it is suitable for medium risk projects and high risk projects.
- The project has complex requirement or a new product line is introduced.
- The User is not sure of the project needs or significant research has to be done on the project.

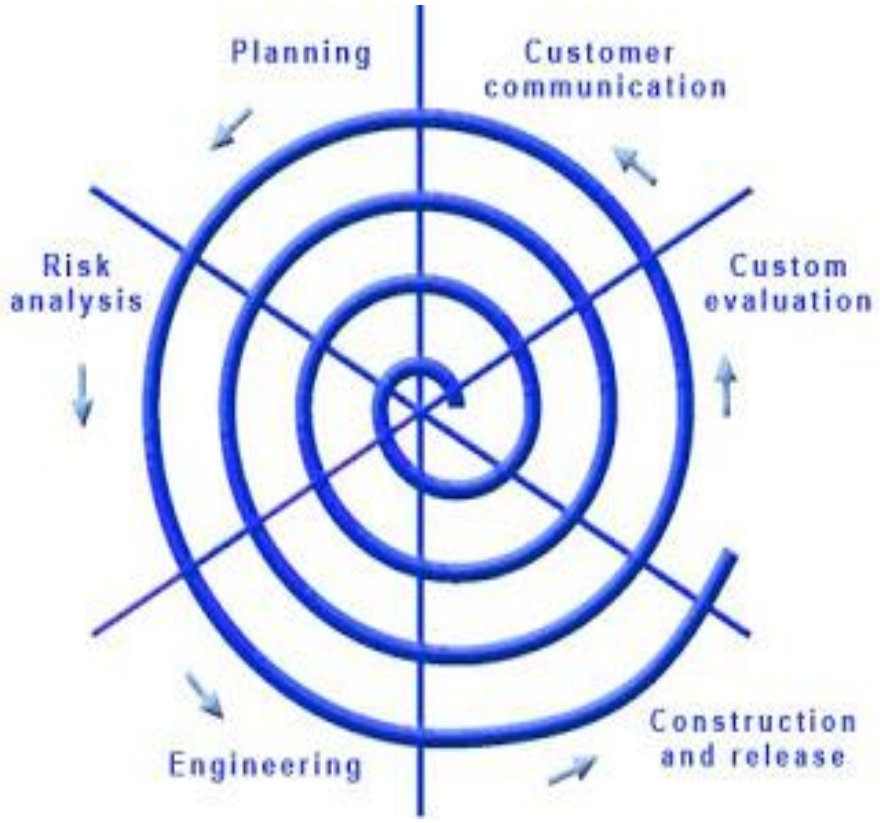

Fig. 2.4 Spiral Model

PROS OF SPIRAL MODEL

1. High amount of risk analysis.
2. Good for large and mission critical projects.
3. A highly customized product can be developed using this.
4. Project monitoring is very easy and effective. Each phase, as well as each loop, requires a review from concerned people. This makes the model more transparent.
5. Risk management is one of the in-built features of the model, which makes it extra attractive compared to other models.

CONS OF SPIRAL MODEL

1. Can be a costly model to use.
2. Risk analysis requires highly specific expertise.
3. Project's success is highly dependent on the risk analysis phase.

4. Rules and protocols should be followed properly to effectively implement this model. Doing so, through-out the span of project is tough.

2.3 SYSTEM ANALYSIS

2.3.1 ANALYSIS OF CURRENT SYSTEM

The current system of coupon distribution provides a platform for online shopping websites to generate and sell coupons. These coupons have to be used for online shopping only. The system supports advertisement of certain product(s) and also provides filtering based on city, state or company name. The coupons sold by the company cannot be redeemed on some local store. It has to be redeemed online only. Some people have myths regarding online shopping and not all people prefer online shopping considering it to be unsafe.

2.3.2 PROBLEMS AND WEAKNESSES OF CURRENT SYSTEM

The current system provides a platform only for online shopping websites and not for small scale or mid-scale companies which do not support online shopping. These coupons have to be redeemed only during online purchase and not at local outlets. Some people do not consider online shopping to be safe. So for them this system may not be beneficial.

2.3.3 REQUIREMENTS OF NEW SYSTEM

The new system should provide a platform for small scale or mid-scale companies to generate their coupons and redeem them on a local outlet. The system should involve an affiliate to the company which will be the communicating platform between company and the customer. It should have online payment for people who prefer it and the payment can also be done directly by meeting the affiliate while purchasing the coupons. For transfer of coupons sensors of android phones have to be used. Thus, an android app for the system is required. For people who do not use android phones the same facilities should be provided on the web application.

2.3.4 USER REQUIREMENTS

There should be five main types of users: admin, company, affiliate, customer, and franchise. The admin should be allowed to verify the companies who wish to register on our portal. Admin must be able to view details of all users. Company should be allowed to register itself and generate its campaign. These coupons should be transferred to affiliate which will be then transferred to the customers by affiliate upon payment. For transferring the coupons an extra facility of sensors should be used. Sensor based transfer should be between affiliate to customer and customer to franchise. The coupons purchased by the customers will be redeemed at the franchise.

2.3.5 SYSTEM REQUIREMENTS

The system should involve an affiliate to the company which will be the communicating platform between company and the customer. It should have online payment for people who prefer it and the payment can also be done directly by meeting the affiliate while purchasing the coupons. For transfer of coupons sensors of android phones have to be used. Thus, an android app for the system is required. For people who do not use android phones the same facilities should be provided on the web application.

2.3.6 HARDWARE AND SOFTWARE REQUIREMENTS

To use the system we require laptops, computers, mobile phones as far as hardware is concerned. This system can work on any platform but internet is a prerequisite. Software requirements include windows platform and android 4.0 and above.

2.4 FEATURES OF NEW SYSTEM

The features of our system are as follows:

- Generation of e-coupons
- Distribution of coupons to the affiliates
- Distribution of coupons to the customers
- Transfer of coupons within customers
- Redemption of coupons

- Tracking of coupons

2.5 SYSTEM DESIGN

2.5.1 Data modelling

2.5.1.1 Data dictionary

1. **AppUser table**:
   This table shows the details of all the registered users. It maintains following fields.

Table 2.5.1.1.1 AppUser

FieldName	Data Type	Size	Key	Constraint
AppUserID	Int	-	Primary Key	Not Nullable
Name	Varchar	100	-	Not Nullable
Address	Varchar	500	-	Not Nullable
City	Varchar	50	-	Not Nullable
Status	Varchar	10	-	Not Nullable
Email	Varchar	50	-	Not Nullable
Mobile	Varchar	20	-	Not Nullable
Username	Varchar	30	-	Not Nullable
Password	Varchar	40	-	Not Nullable
Type	Varchar	10	-	Not Nullable
LastLoginTime	DateTime	50	-	Not Nullable
LoginCount	Int	-	-	Not Nullable
Photo	Varchar	500	-	Not Nullable
TRhumbnailPhoto	Varchar	500	-	Not Nullable
Status	Varchar	10	-	Not Nullable
CompanyID	Int	-	Foreign Key	Nullable
RegistrationTime	DateTime	50	-	Not Nullable
PayPalAccount	Varchar	100	-	Not Nullable

2. **Campaign table**:
   This table shows the details of all the generated campaigns. It maintains following fields.

Table 2.5.1.1.2 Campaign

FieldName	Data Type	Size	Key	Constraint
CampaignID	Int	-	Primary Key	Not Nullable
StartDate	DateTime	-	-	Not Nullable

EndDate	DateTime	-	-	Not Nullable
CompanyID	Int	-	Foreign Key	Not Nullable
Name	Varchar	100	-	Not Nullable
Type	Varchar	20	-	Not Nullable
CategoryID	Int	-	Foreign Key	Not Nullable
NoOfCoupons	Int	-	-	Not Nullable
BaseValue	Int	-	-	Not Nullable
BenefitValue	Float	-	-	Nullable
Image	Varchar	500	-	Not Nullable
DistributionStartDate	DateTime	-	-	Not Nullable
DiscountValue	Int	-	-	Nullable

3. Coupon table:

This table shows the details of all the coupons. It maintains following fields.

Table 2.5.1.1.1.3 Coupon

FieldName	Data Type	Size	Key	Constraint
CouponID	int	-	Primary Key	Not Nullable
CampaignID	Int	-	Foreign Key	Not Nullable
CouponCode	Double	-	-	Not Nullable
AffiliateID	Int	-	Foreign Key	Nullable
CustomerID	Int	-	Foreign Key	Nullable
FranchiseeID	Int	-	Foreign Key	Nullable
Status	Varchar	20	-	Not Nullable
AffiliateTime	DateTime	30	-	Nullable
CustomerTime	DateTime	30	-	Nullable
FranchiseeTime	DateTime	30	-	Nullable

4. Category table:

This table shows the details of all the categories. It maintains following fields

Table 2.5.1.1.1.4 Category

FieldName	Data Type	Size	Key	Constraint
CategoryID	Int	-	Primary Key	Not Nullable
Name	Varchar	100	-	Not Nullable
Description	Varchar	500	-	Not Nullable

5. CompanyCategory table:

This table is an association table to resolve many-to-many relationship between

Company and Category. It maintains following fields.

Table 2.5.1.1.1.5 CompanyCategory

FieldName	Data Type	Size	Key	Constraint
CompanyCategoryID	Int	-	Primary Key	Not Nullable
CompanyID	Int	-	Foreign Key	Not Nullable
CategoryID	Int	-	Foreign Key	Not Nullable

6. CompanyFollower table:

This table gives the details of a company's followers. It maintains following fields

Table 2.5.1.1.1.6 CompanyFollower

FieldName	Data Type	Size	Key	Constraint
FollowerID	Int	-	Primary Key	Not Nullable
CustomerID	Int	-	Foreign Key	Not Nullable
CompanyID	Int	-	Foreign Key	Not Nullable

7. CompanyFollower table:

This table is an association table to resolve many-to-many relationship between

Company and Category. It maintains following fields.

Table 2.5.1.1.1.7 CompanyFollower

FieldName	Data Type	Size	Key	Constraint
CustomerFeedbackID	Int	-	Primary Key	Not Nullable
CustomerID	Int	-	Foreign Key	Not Nullable
CompanyID	Int	-	Foreign Key	Not Nullable
Feedback	Varchar	500	-	Nullable
Time	DateTime	30	-	Not Nullable
Rating	Int	-	-	Nullable

2.6 ER Diagram

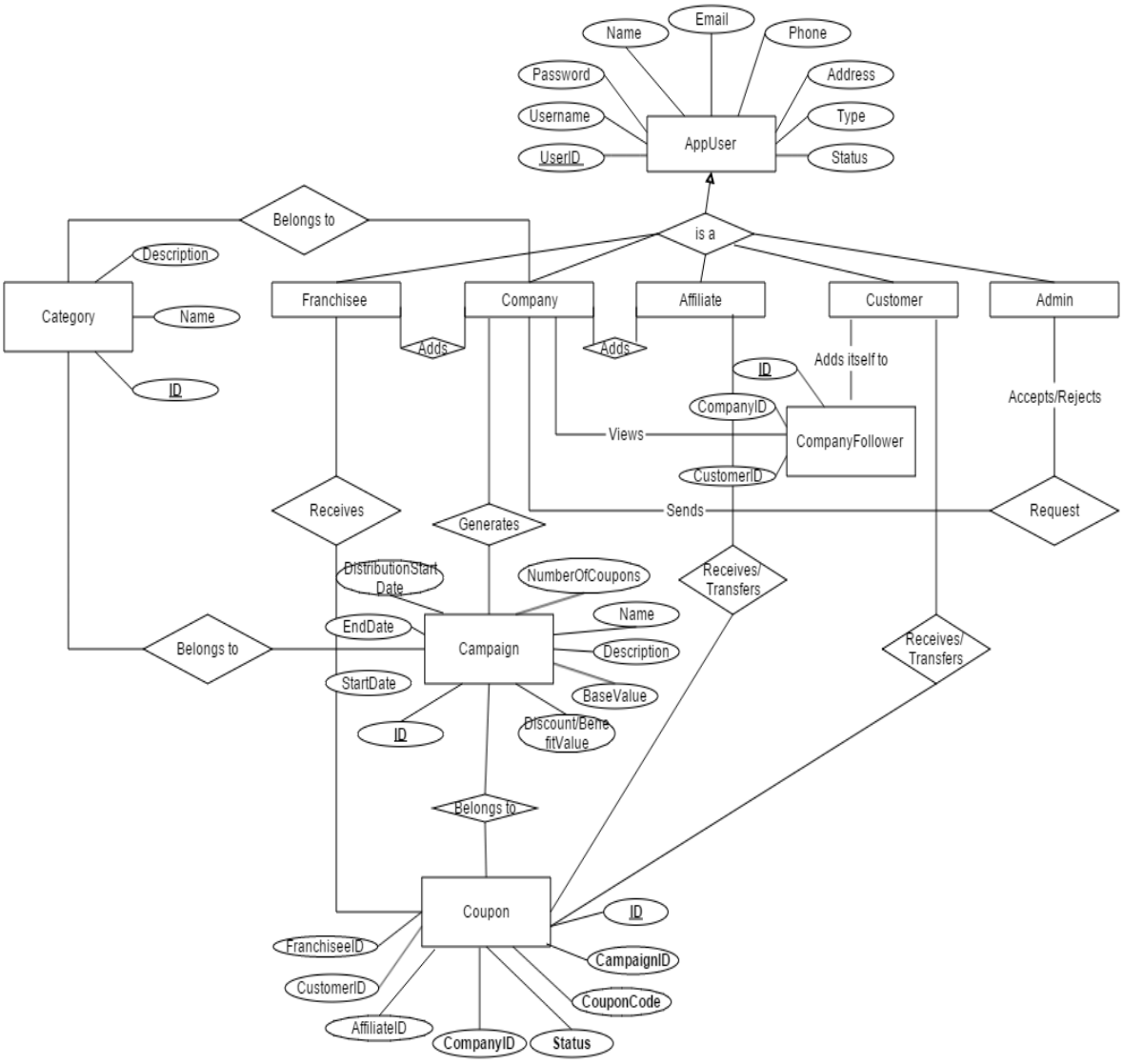

Fig 2.5 ER Diagram

2.7 Use Case Diagram

1. Register Usecase

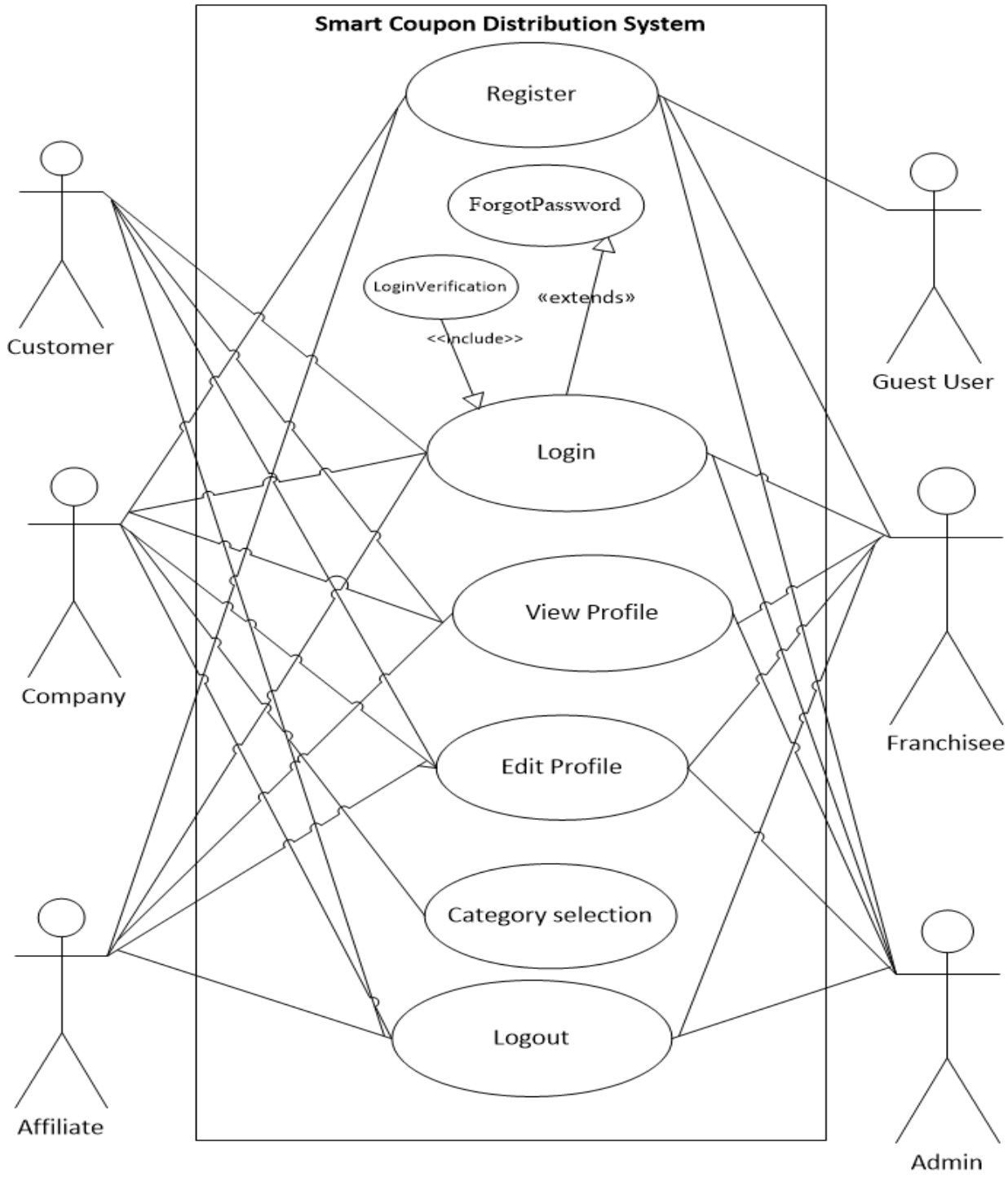

Fig. 2.6 Register Use Case

2. Search User and User Management Use Case

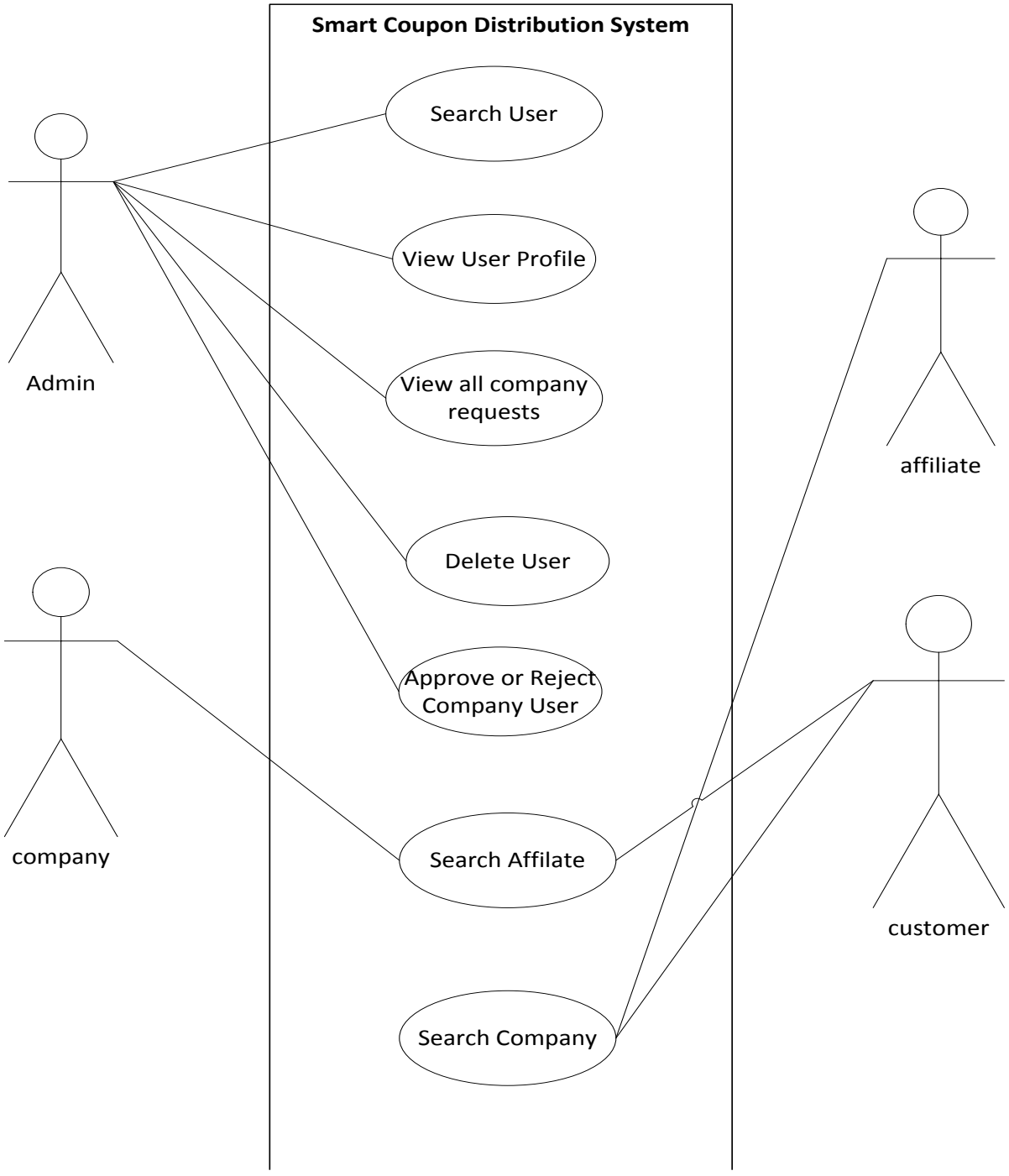

Fig 2.7 Search user and user management

3. Coupon Campaign Generation

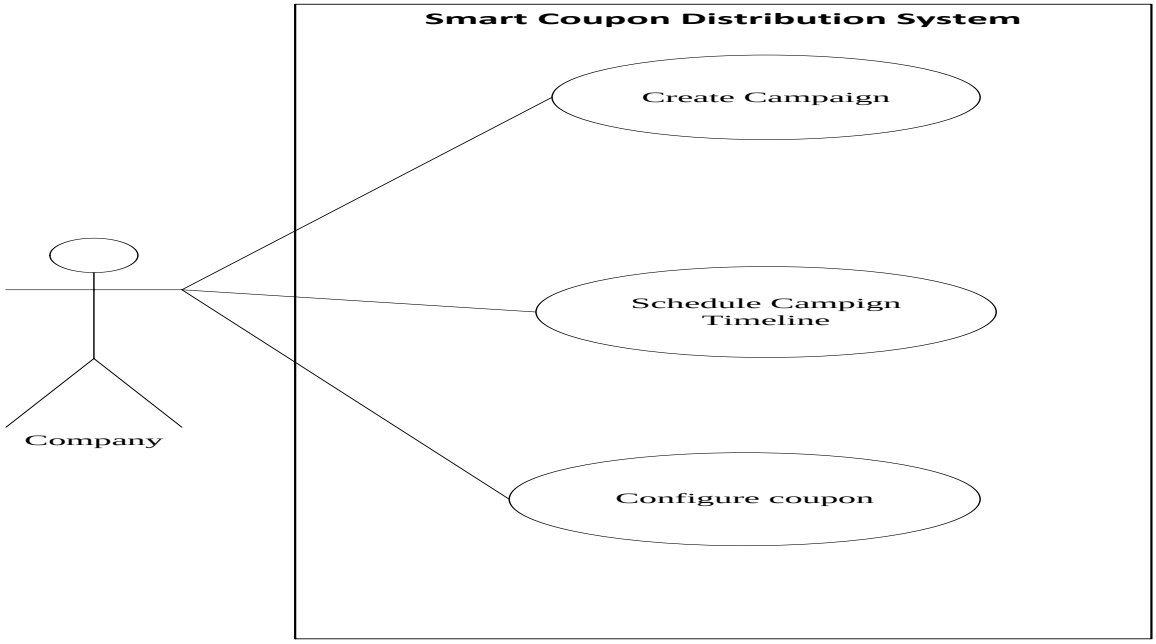

Fig. 2.8 Coupon Campaign Generation

4. Company-Affiliate Connection Use Case

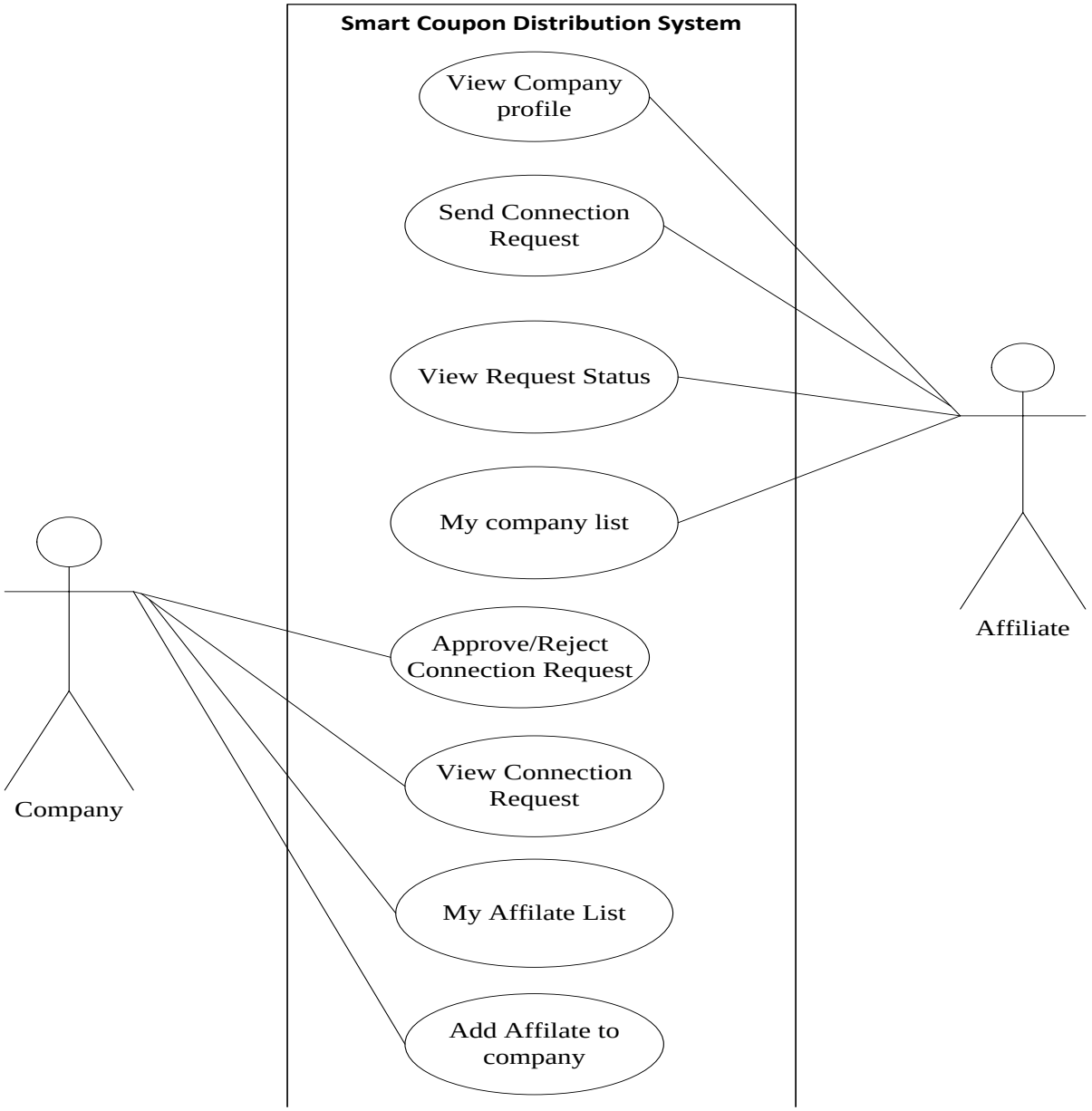

Fig. 2.9 Company Affiliate Connection UseCase

4. Affiliate Coupon Distribution Use Case

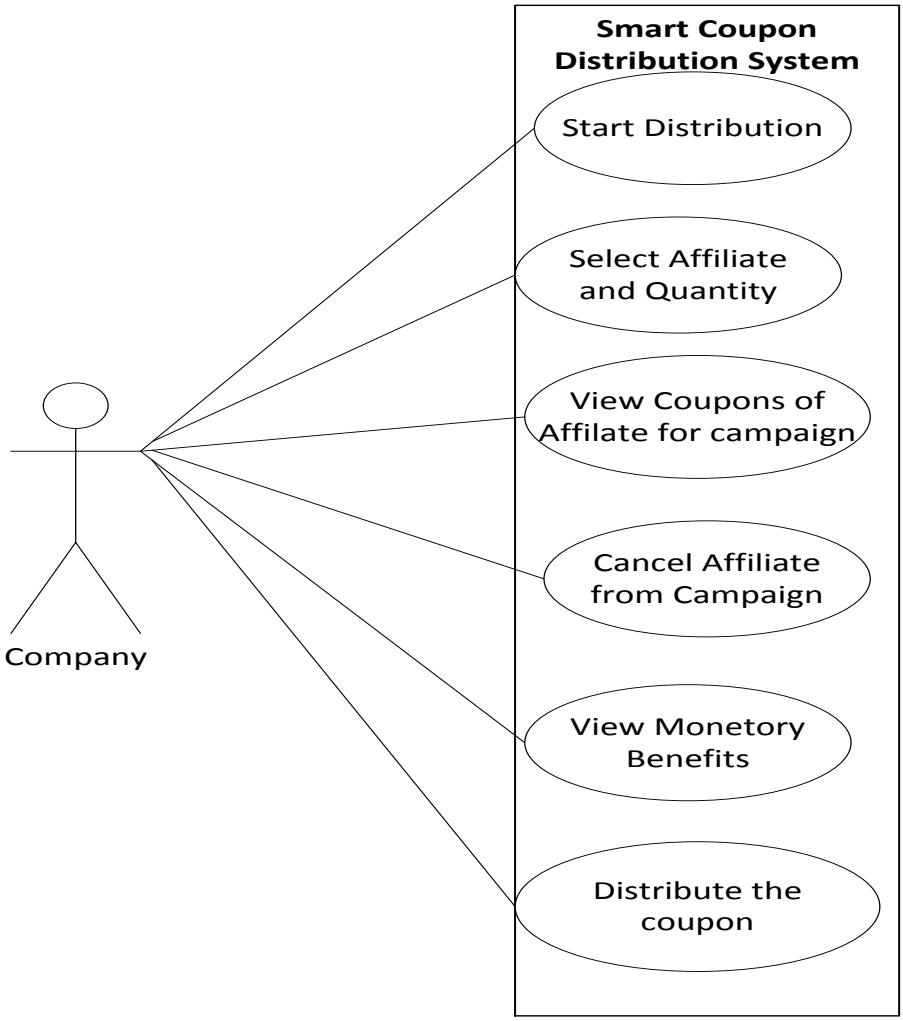

Fig 2.10 Affiliate Coupon Distribution Use Case

5. Franchisee Use case

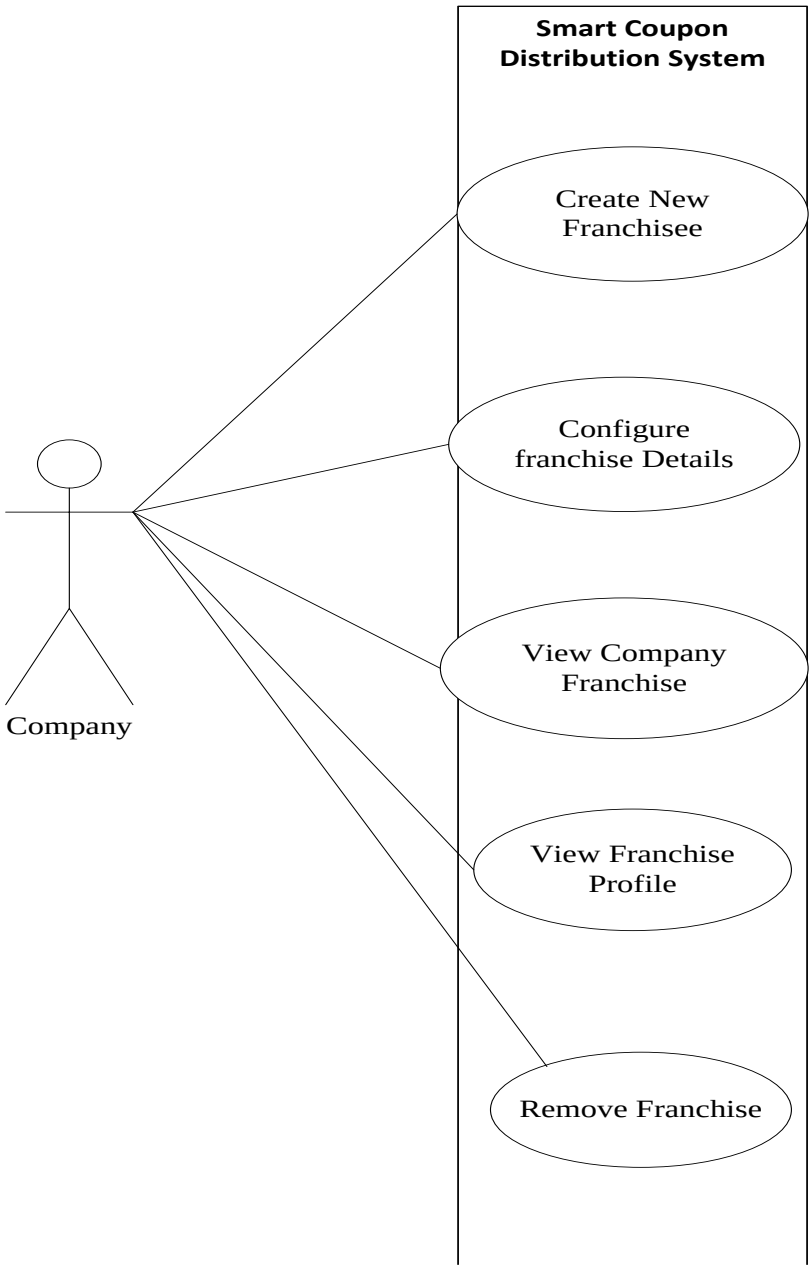

Fig 2.11 Franchisee Use case

6. Wallet Management Use Case

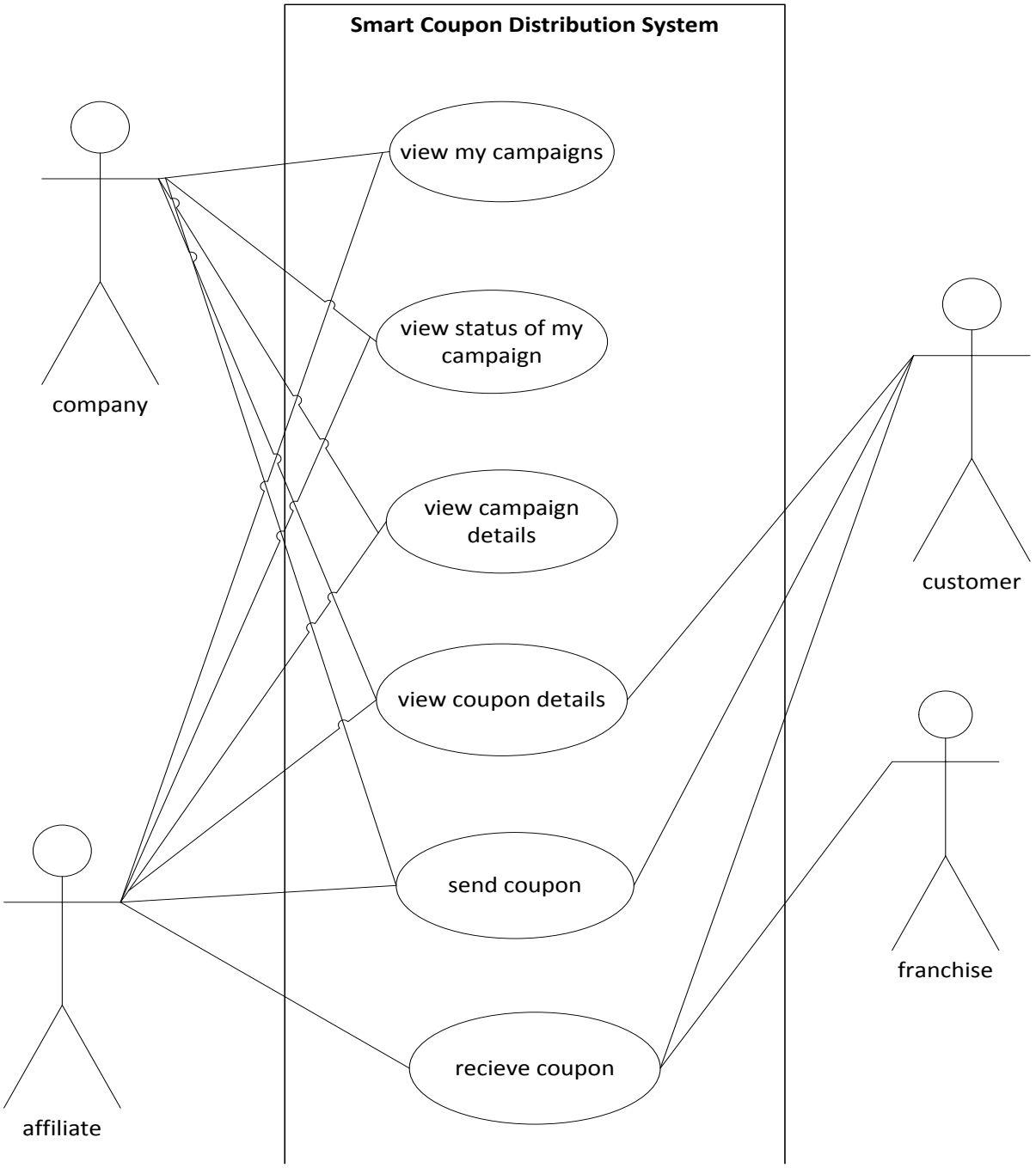

Fig 2.12 Wallet Management Use Case

2.8 Class Diagram

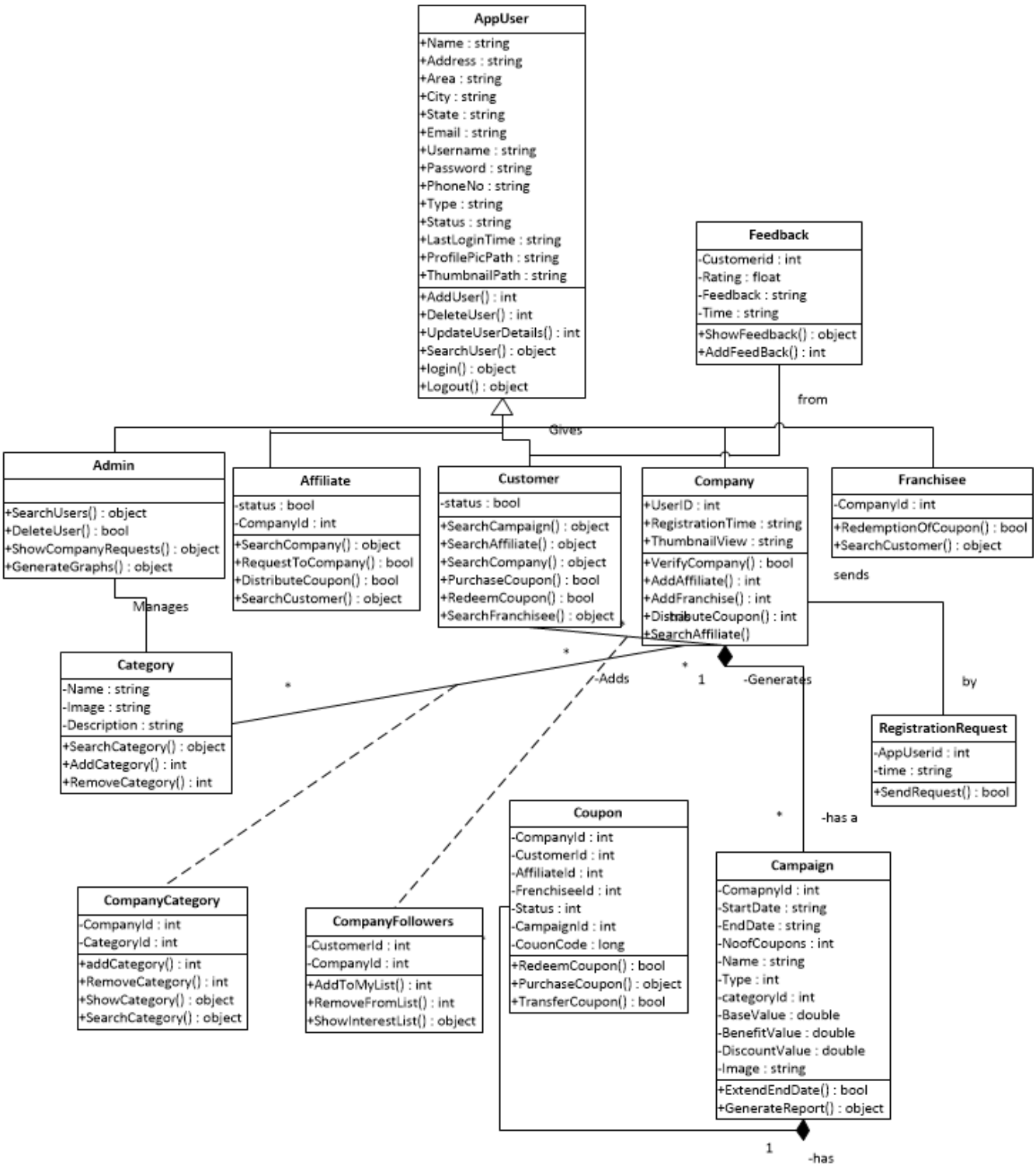

Fig.2.13 Class Diagram

2.9 Sequence Diagram

1. Registration of Company

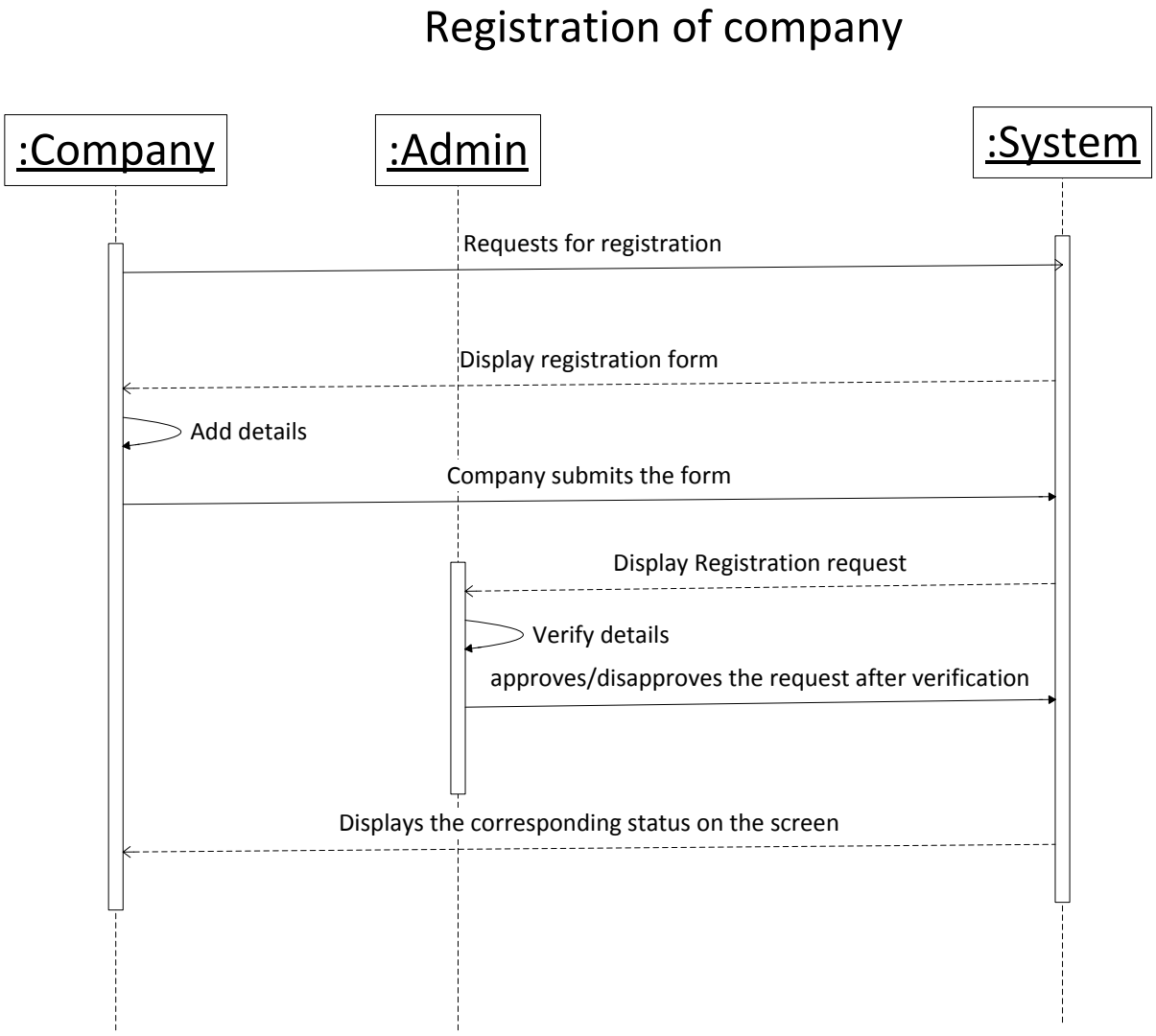

Fig.2.14 Registration of Company

2. Registration of Customer

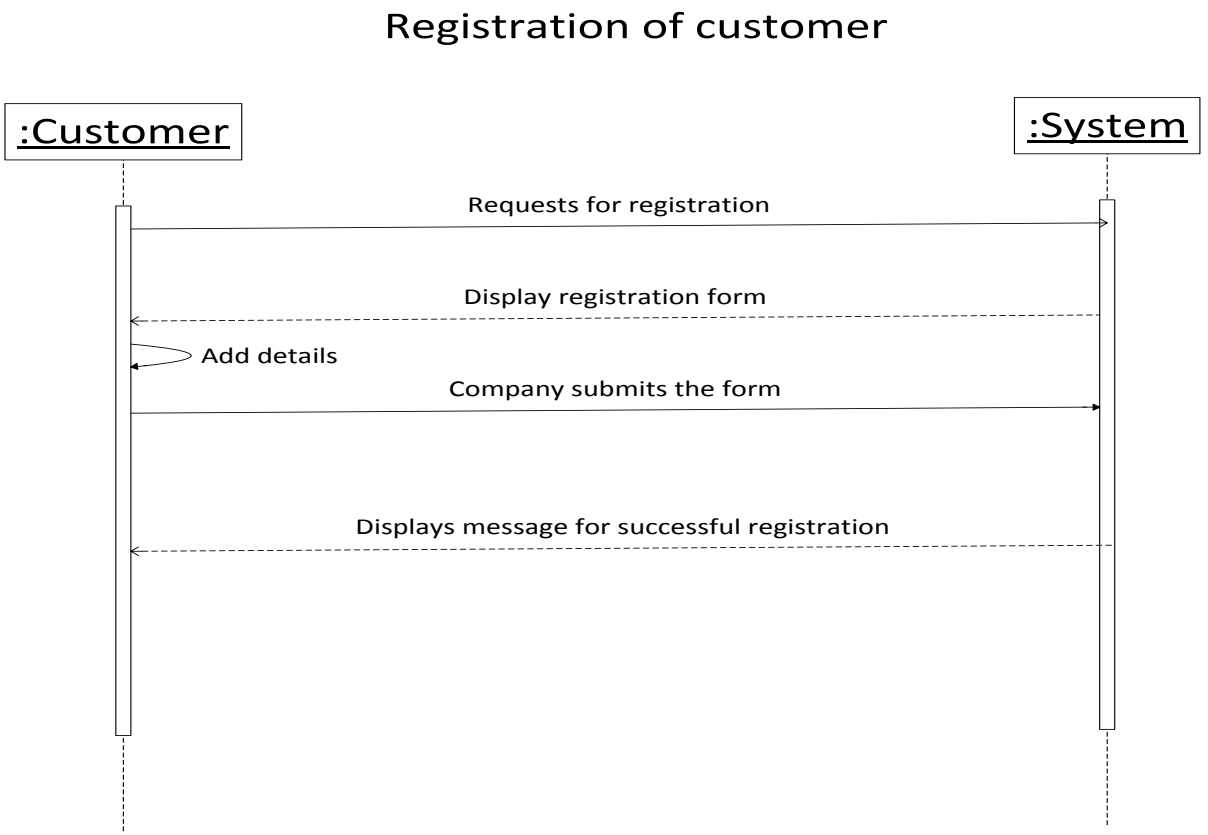

Fig.2.15 Registration of Customer

3. Registration of Affiliate

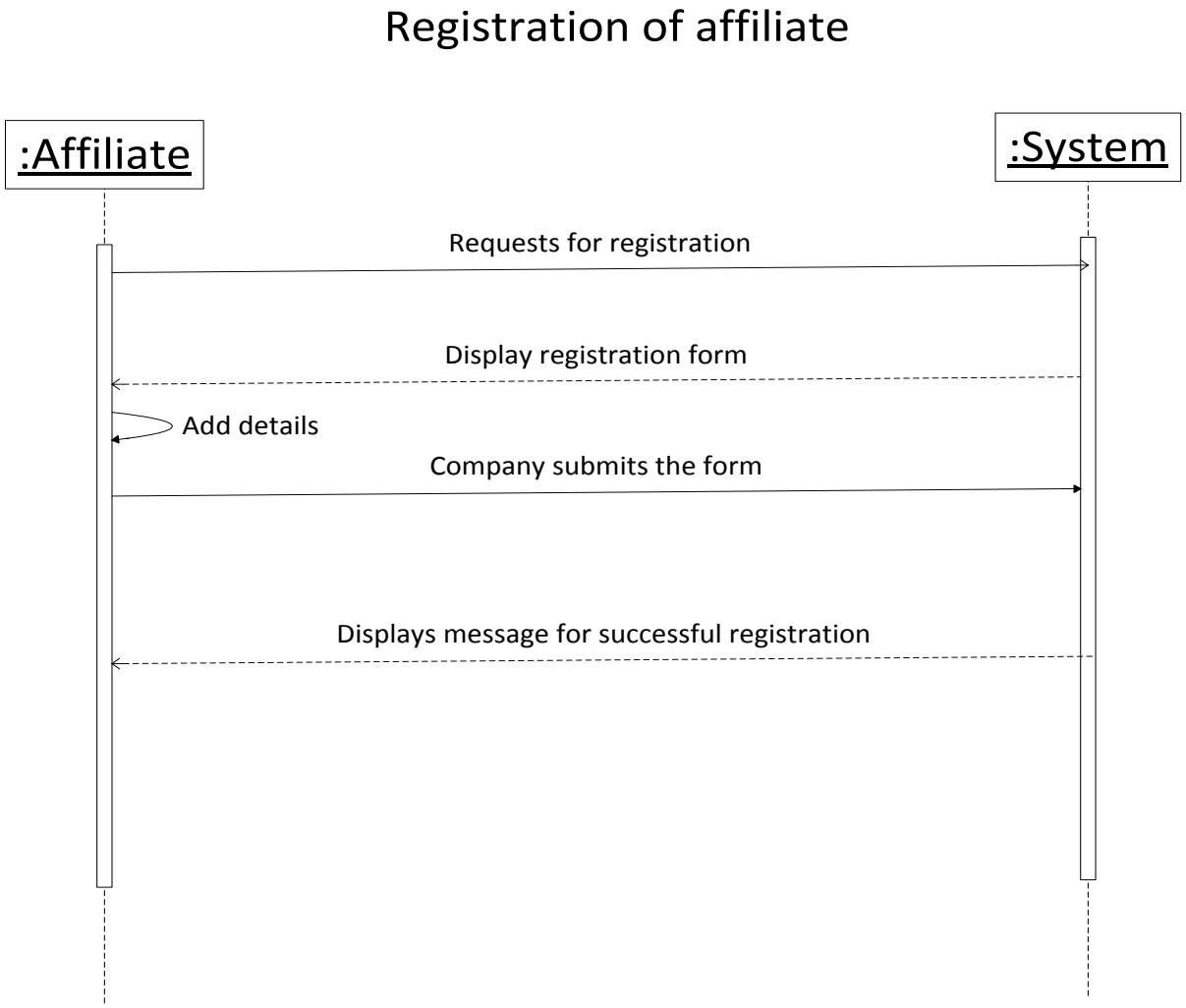

Fig.2.16 Registration of Affiliate

4. Search User and Delete User

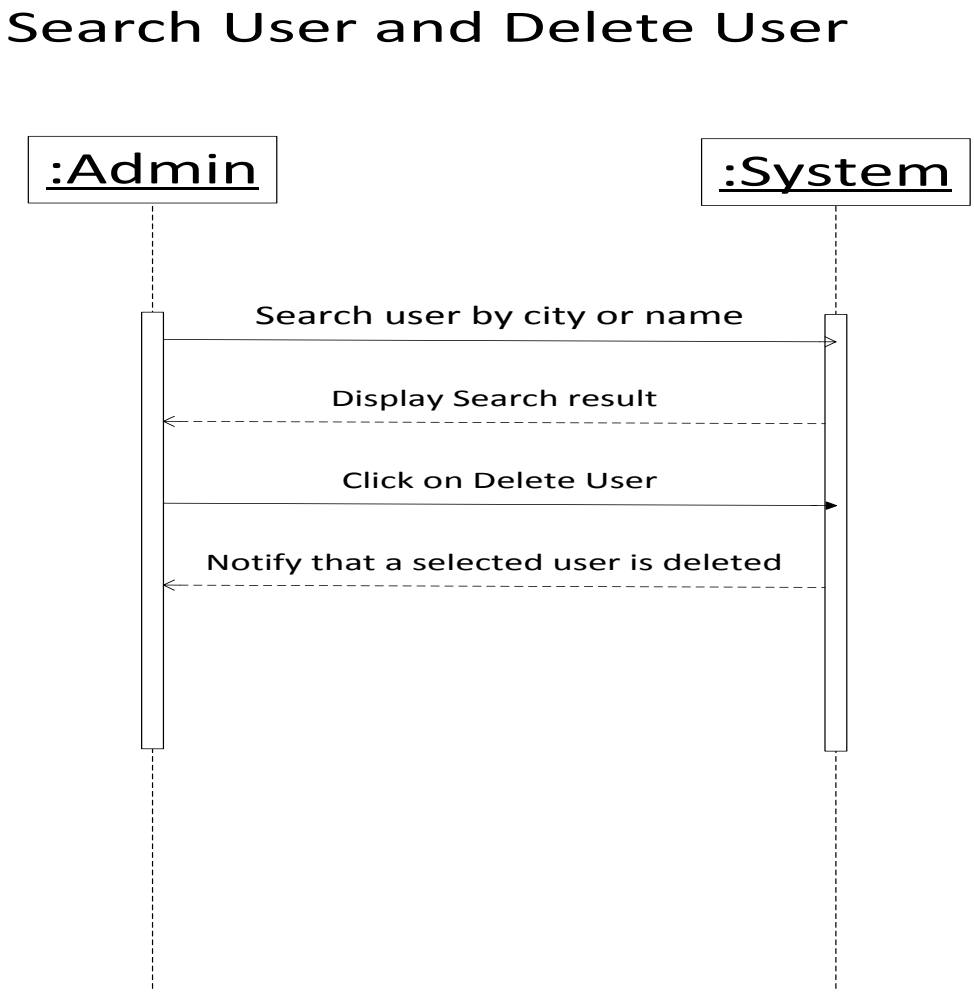

Fig 2.17 Search User Delete user

5. Add Franchise

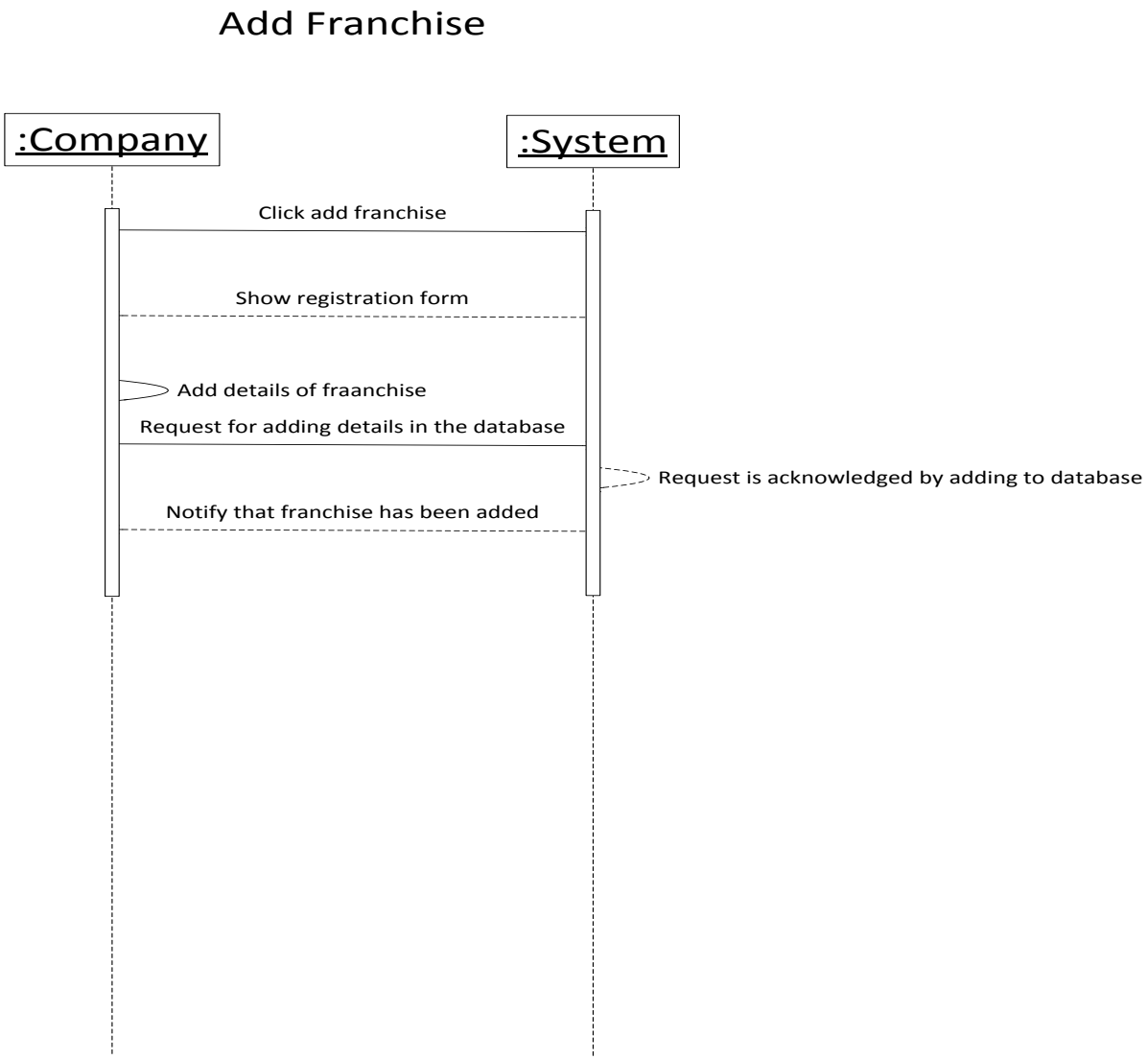

Fig. 2.18 Add Franchise

6. Campaign Generation And Coupon Distribution

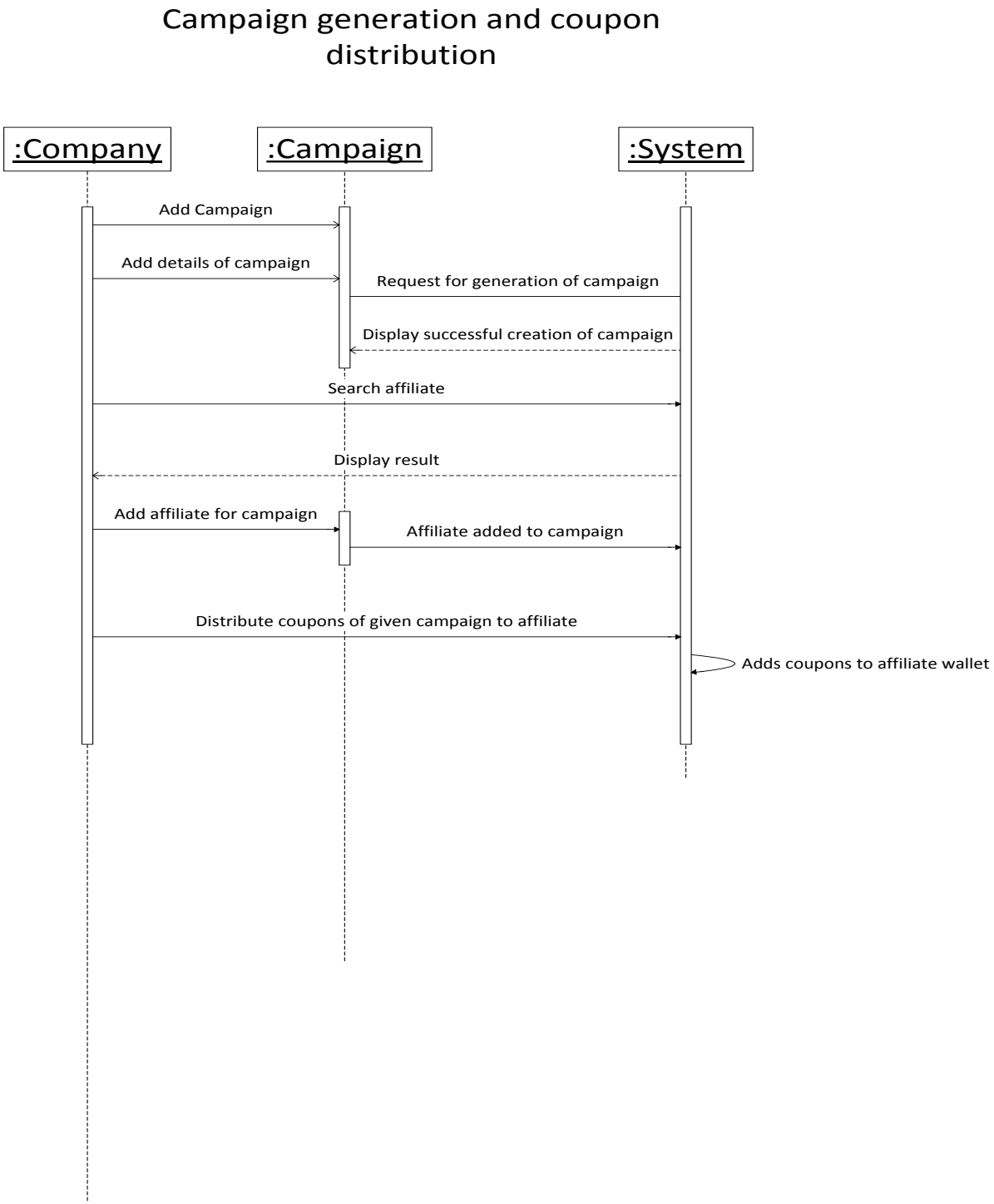

Fig2.19 Campaign Generation And Coupon Distribution

7. Company Affiliate Connection

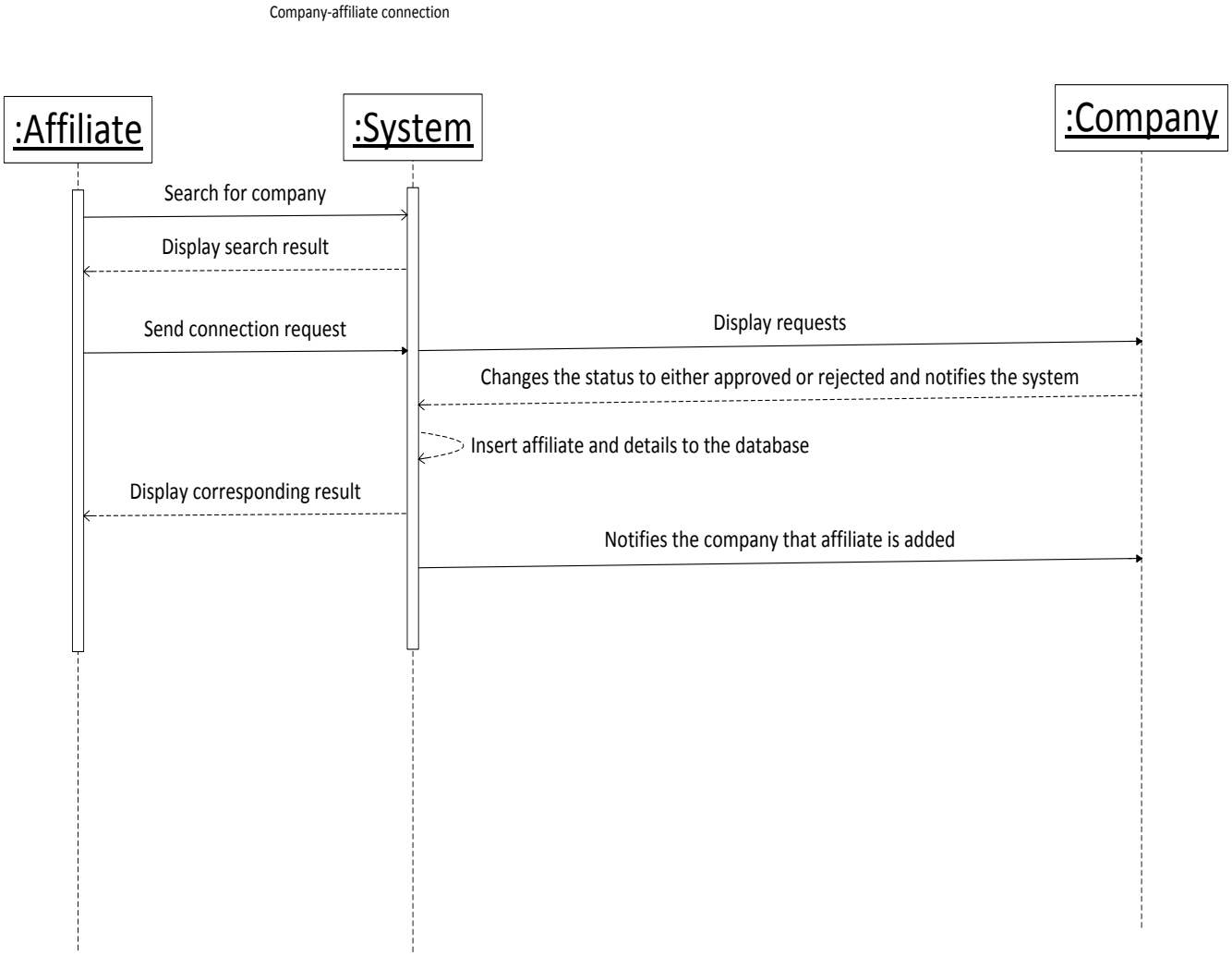

Fig 2.20 Company Affiliate Connection

2.10 Activity Diagram

2.10.1 Manage Users

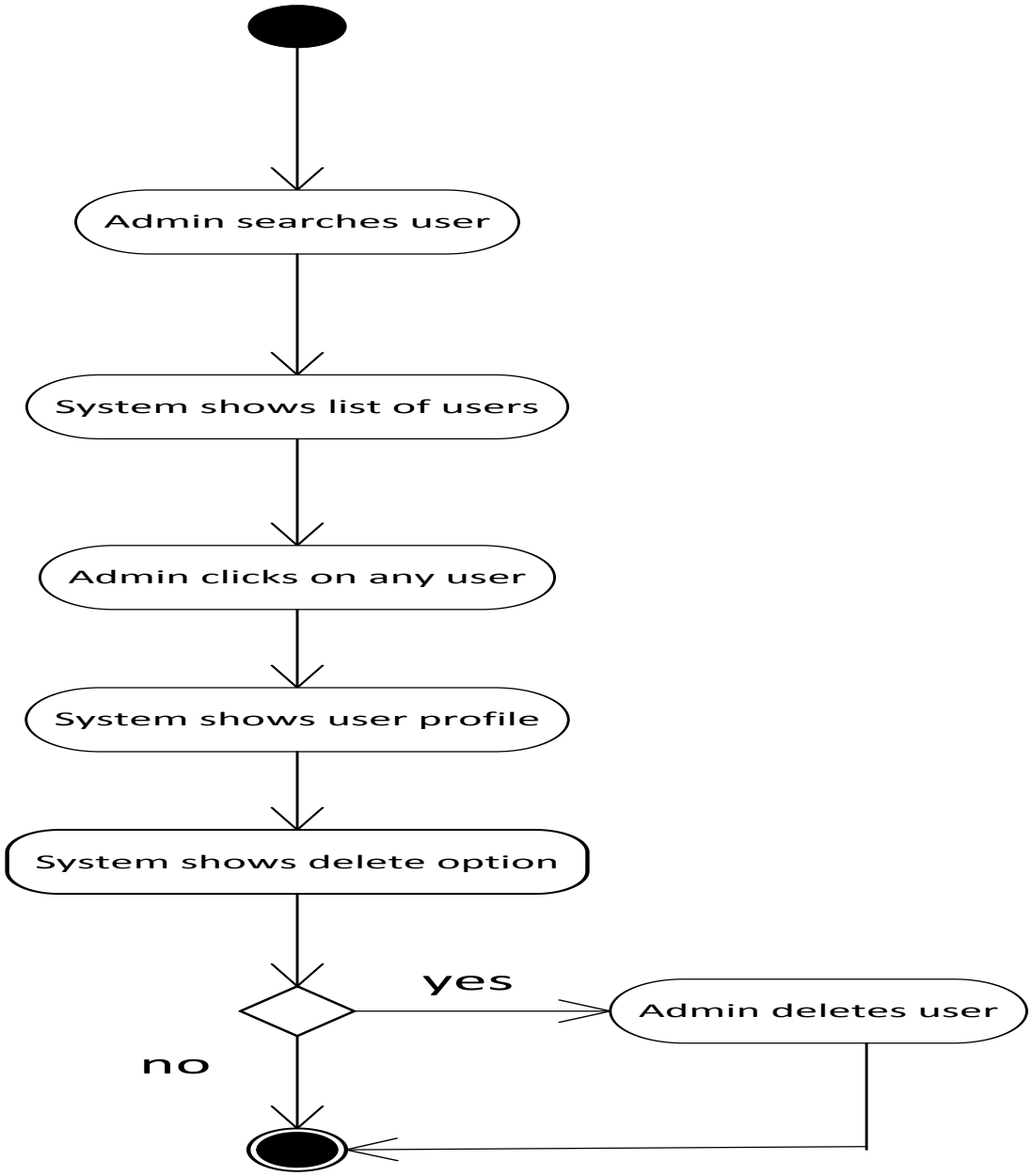

Fig. 2.21 Manage Users

2. Search User

Fig 2.22 Search User

3. Generate Campaign

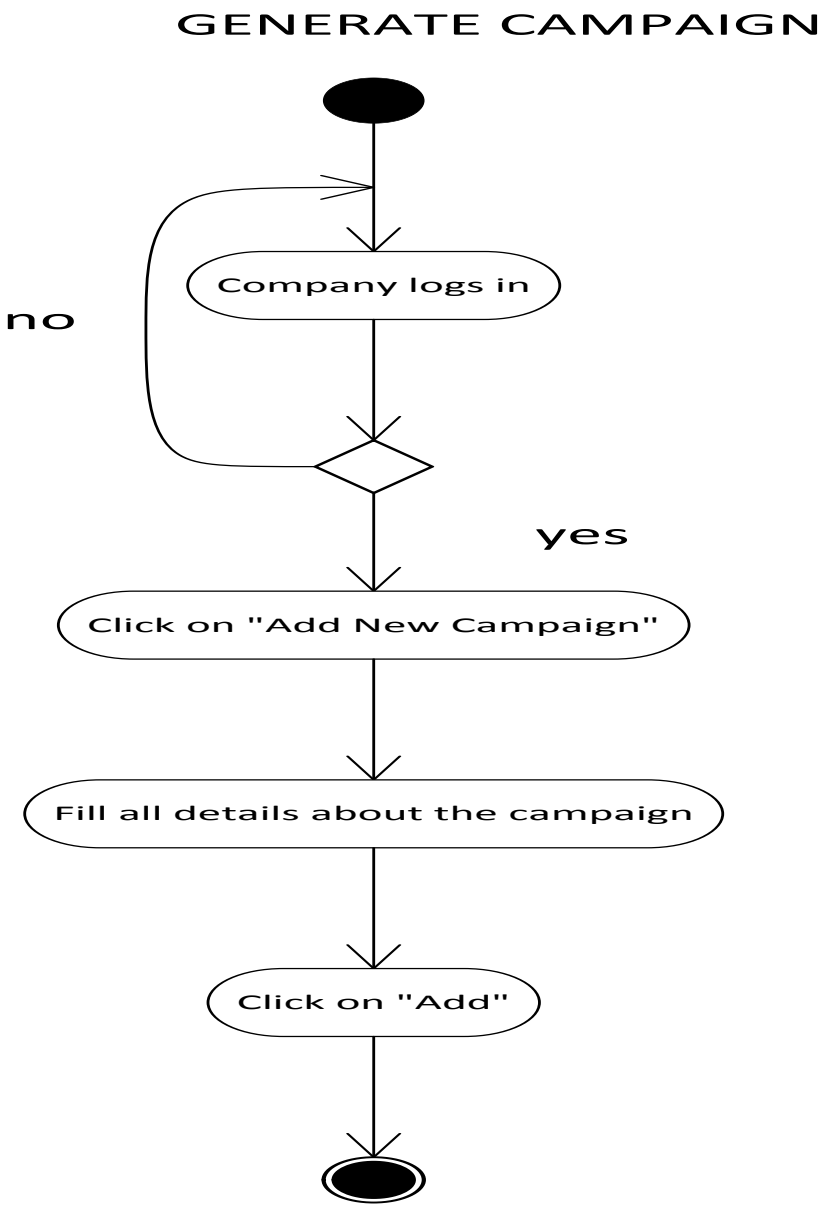

Fig 2.23 Generate Campaign

4. Affiliate-Company Connection

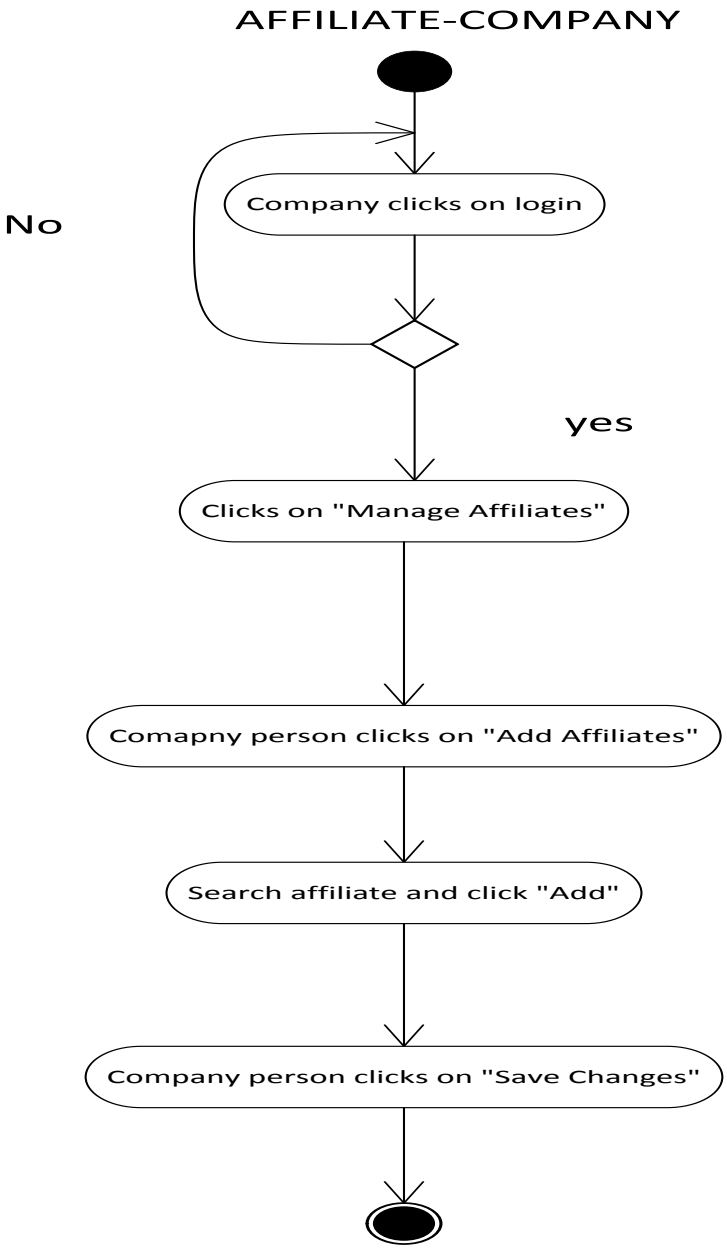

Fig 2.24 Affiliate Company Connection

5. Coupon distribution to affiliate

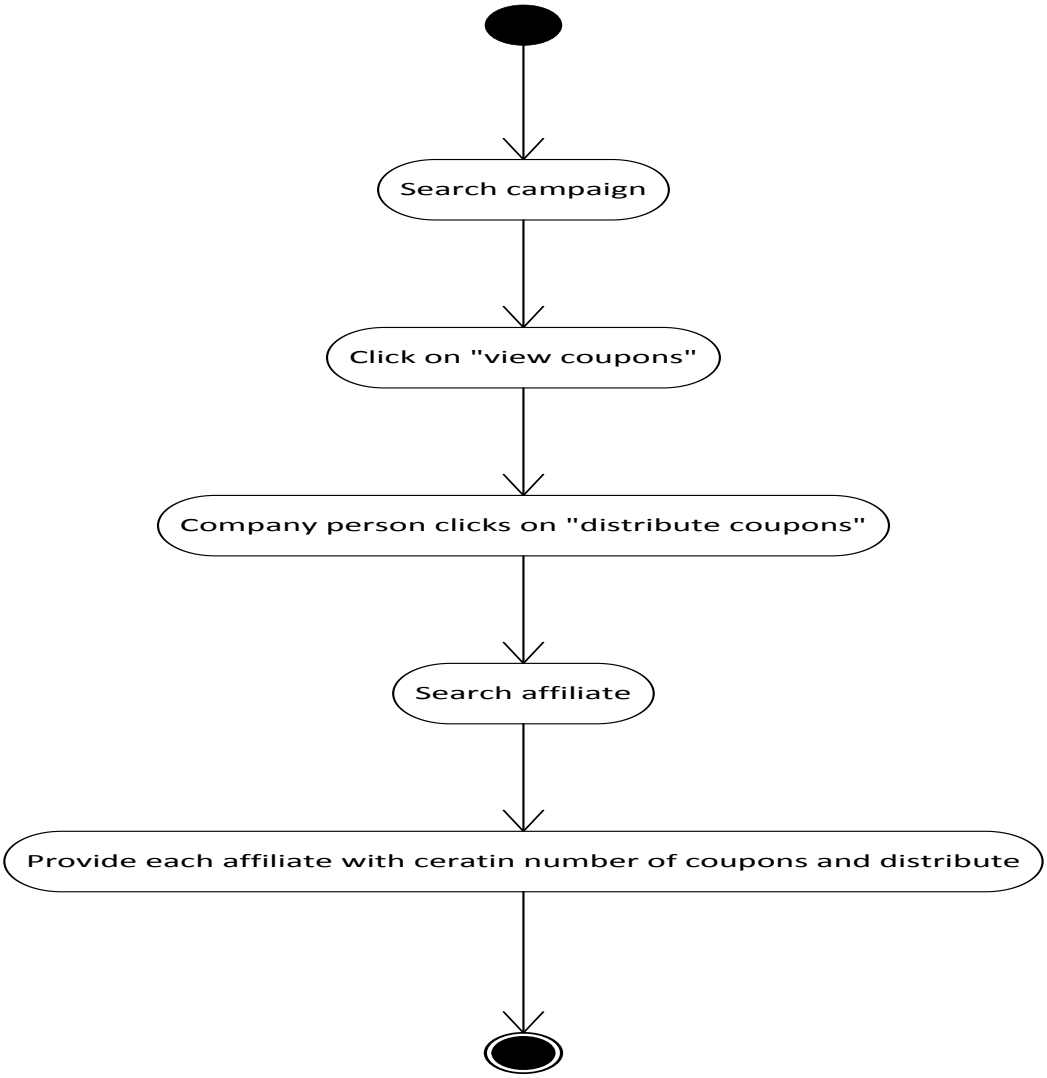

Fig 2.25 Coupon Distribution to affiliate

6. Affiliate Coupon Distribution

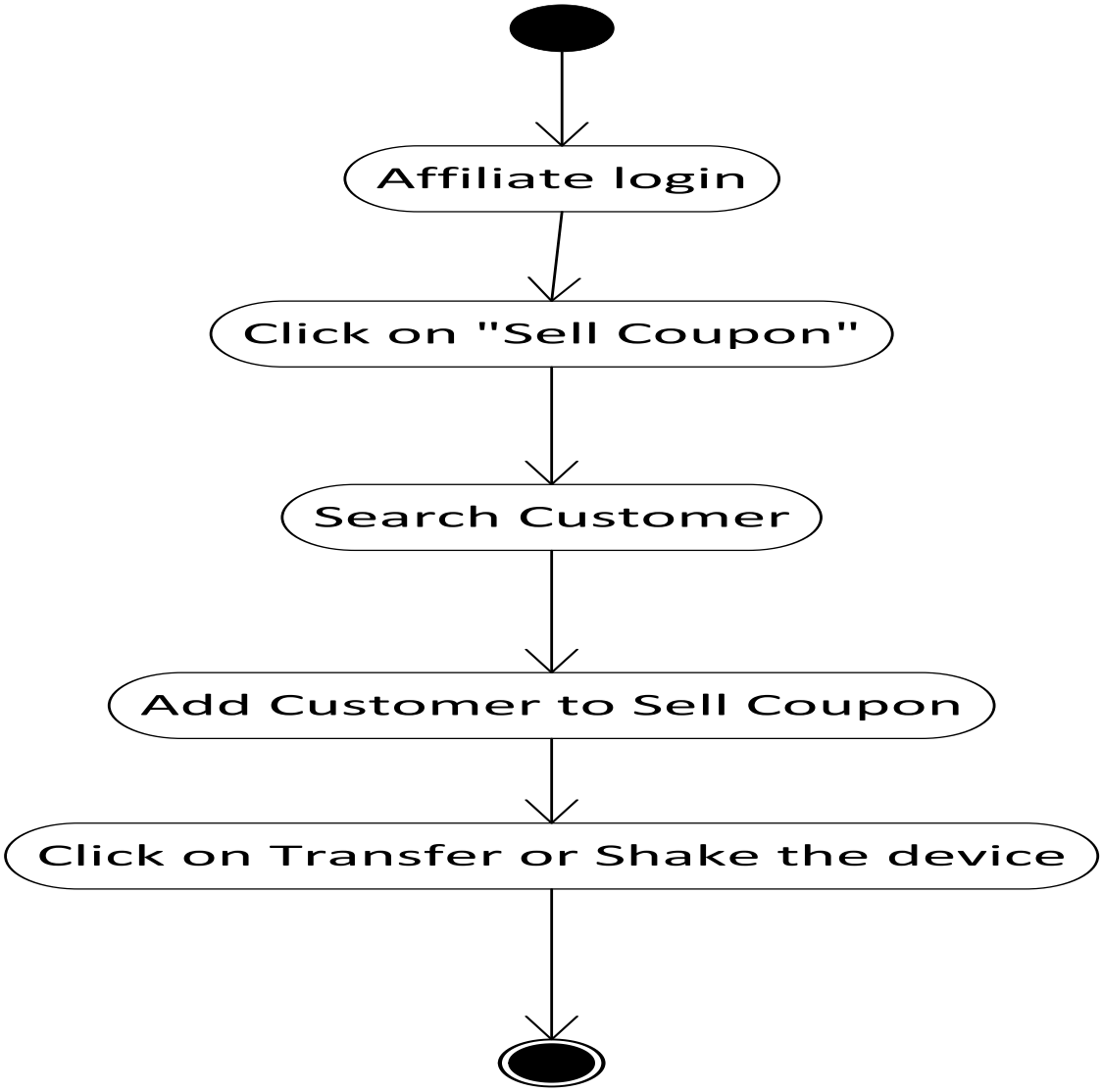

Fig 2.26 Affiliate Coupon Distribution

7. Add Franchisee

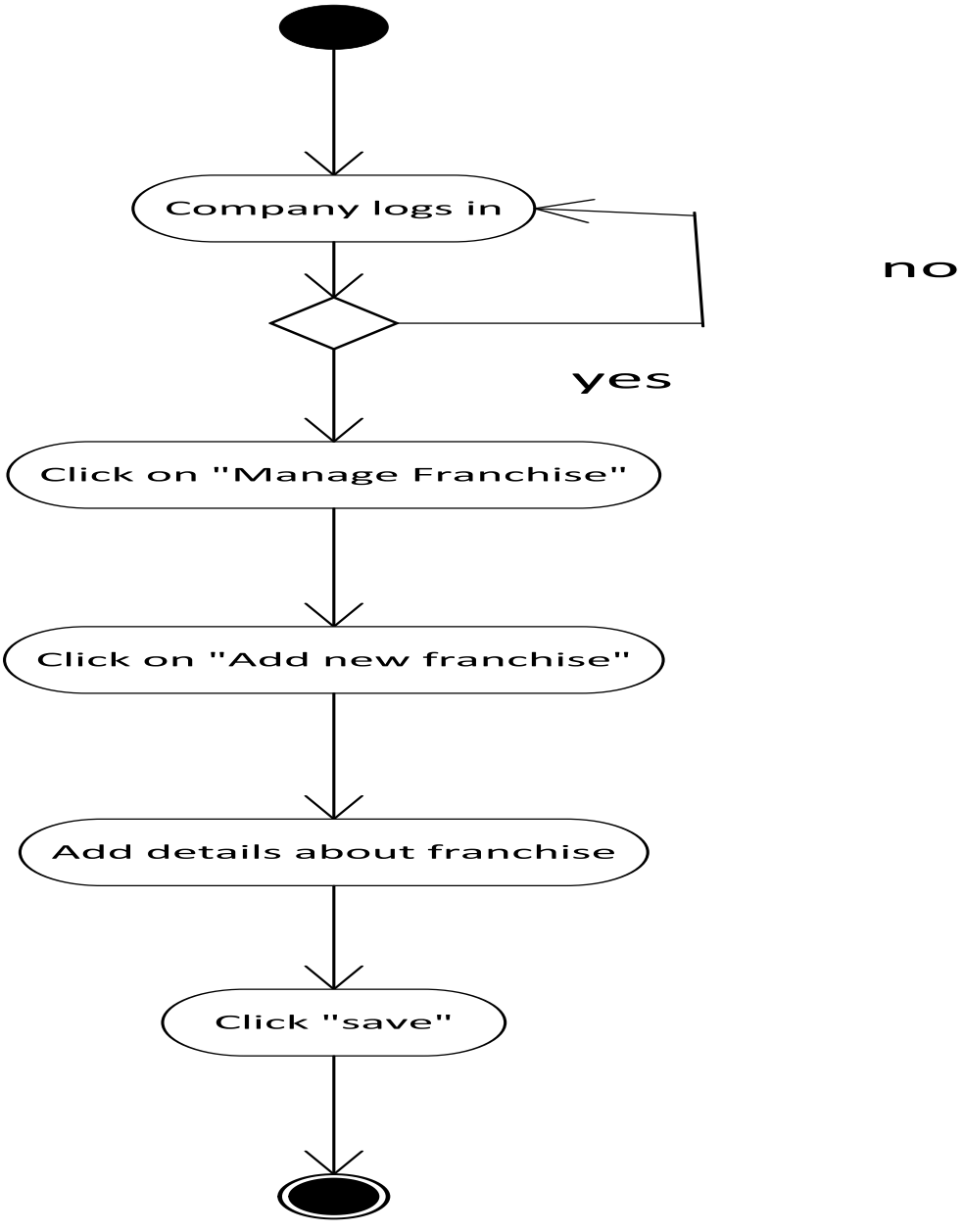

Fig 2.27 Add Franchise

8. Redemption Of Coupon

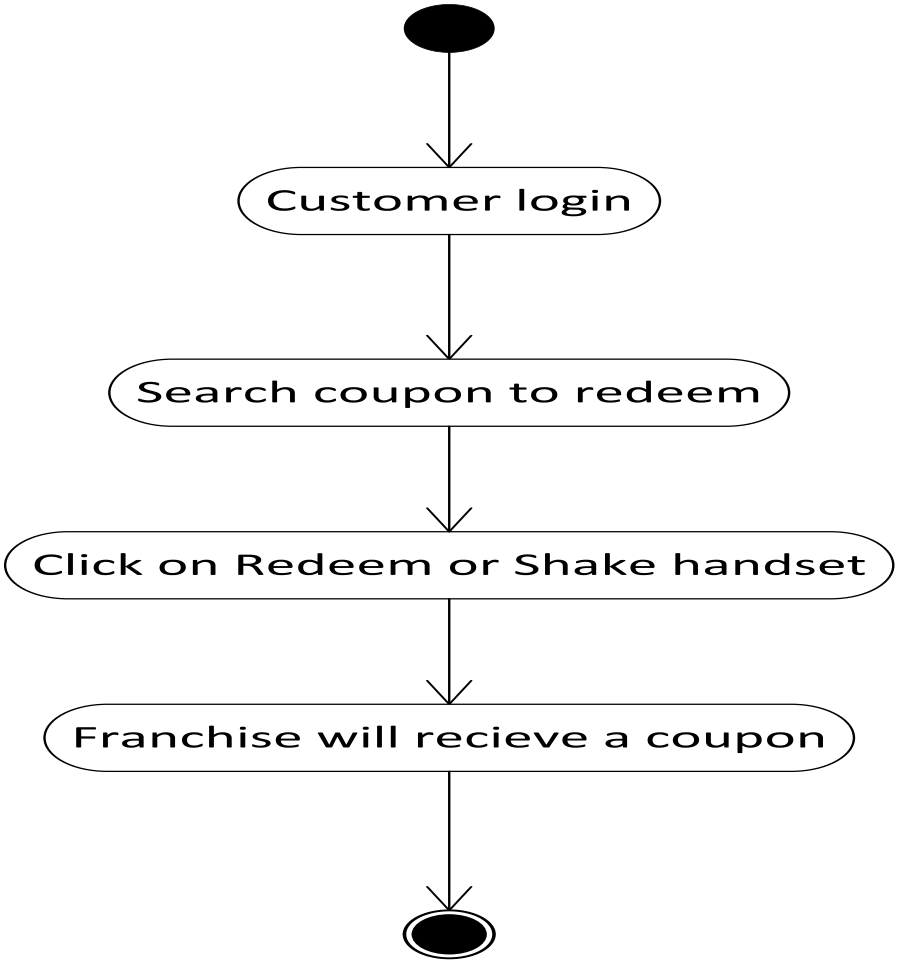

Fig. 2.28 Redemption of Coupon