

Technovestor: A Web-based Entrepreneur Matchmaking Tool

Amal AlMukhlal ^{*1}, Zainab AlJabr*, Hawra'a AlKhotam*, Alanoud AlOraik*, and Amir Khwaja**

*Bachelor Student, College of Computer Sciences and Information Technology, King Faisal University, Alahsa, Kingdom of Saudi Arabia

**Assistant Professor, College of Computer Sciences and Information Technology, King Faisal University, Alahsa, Kingdom of Saudi Arabia

Abstract

Entrepreneurship is one of the growing areas in the Kingdom of Saudi Arabia and the country is becoming the leader in the Middle East for reforming Entrepreneurship and the ease of doing business. Nowadays, there are several creative ideas by individuals and many of these ideas do not become a reality due to difficulties in getting outside capital. However, recently, investors are following crowdfunding approach in order to fund start-ups and small creative products. In this paper, an entrepreneur matchmaking tool is presented that is expected to solve some of the problems that exist for both creators of innovative technical ideas and investors to help bringing creative ideas to life. The main purpose of developing this tool is to provide a common platform that will be acting as a middleware between creative people and investing parties in the Middle East. The system includes features like facilitating negotiation between parties, protecting of funding and ideas, creating and managing contracts between the parties, and controlling and tracking communication between the involved parties, among others. The Web-based tool gives the chance for interesting idea creators in the Middle East region to achieve their dreams with the support from investors who seek creative products in order to lead the market and be at the top of their competitors. In addition, the Web-based tool has high potential in providing entrepreneurship opportunities for women in the Kingdom of Saudi Arabia who can work from home in a Saudi Arabia work environment which has limited opportunities for women.

¹ Corresponding author's email: amal.almukhlal@hotmail.com

Keywords: Crowdfunding, entrepreneurship, technology idea and investment matchmaking, Web based entrepreneurship tool.

Cite this article: AlMukhlal, A., AlJabr, Z., AlKhotam, H., AlOraik, A., & Khwaja, A. (2017). Technovestor: A Web-based Entrepreneur Matchmaking Tool. *International Journal of Management, Accounting and Economics*, 4(11), 1085-1105.

Introduction

The Kingdom of Saudi Arabia is growing in the area of entrepreneurship and is leading the other countries in the Gulf region due to two main factors: ease to start the business and trading across the borders with other Gulf countries [1]. Saudi Arabia has traditionally been a predominately a male dominating society where opportunities for women in the work and business environment are few and far between. However, there appears to be a momentum towards female entrepreneurs and the trend for female entrepreneurship is seen as a good career choice for the Saudi Arabia women for their social advancement and economic development of the country [2]. More opportunities are needed to encourage Saudi Arabian women to come forward and run businesses from the comfort of their homes. The growth of Internet based commerce has further provided a boost to such entrepreneurship opportunities. The Technovestor project is one such entrepreneurship idea by a group of Saudi Arabia female information system graduates. As (Kramer & Chen, 2010) believe that body text, in research papers, should involves introduction, theoretical framework, methodology, findings, conclusion and discussion, and recommendations.

Technovestor is a matchmaking system between technology based project ideas and potential investors. The Technovestor system helps an idea creator seeking financing for startup. The technology idea creators may start their investor search through matchmaking services. Matchmakers provide a range of services that may consist of communication with investors to Websites suggesting business opportunities for companies seeking investments. An idea creator may try to seek an affiliated investor, which means, someone who has some sort of contact with a creator of idea in their business field but is not necessarily related to or acquainted with them [3]. Today, investors are interested to fund small start-up business rather than in the stock market for several reasons. Firstly, investors are not going to pay massive prices to fund entrepreneur firms. Moreover, they know where to put their money in terms of having sufficient information about the firm which they are going to help. They believe small firms produce innovative products to economic growth. Furthermore, small firms have an important aspect which is the high speed of response to changes since technology is considered a dynamic environment. All these factors support the investment for innovative ideas by either individuals or small start-ups [4]. As (Kramer & Chen, 2010) believe that body text, in research papers, should involves introduction, theoretical framework, methodology, findings, conclusion and discussion, and recommendations.

The main purpose of the Technovestor system is to help genius minded people to proceed with the work on their intelligent technical ideas, which are applicable and helpful for the community. Technovestor will help them to scout companies who are willing to support the ideas creators and help them to overcome the challenges to bring the product to life by providing resources, licensing, and so on. The Technovestor

system is expected to help investors who seek original technical ideas in several areas to bring innovative products out in the market. This entrepreneur relationship is necessary to support the ideas creators in several areas, such as, finding the right manufacturer, knowing and understanding legal rights, and financing the project. Both of the parties are expected to gain benefit from the collaboration. The investors will benefit by having a share and revenue, and idea creators will ensure their ideas will be funded and implemented. Simply, if someone has a great idea, but do not have the capital to make that idea a reality, selling the intellectual property online may be a good option. As (Kramer & Chen, 2010) believe that body text, in research papers, should involves introduction, theoretical framework, methodology, findings, conclusion and discussion, and recommendations.

The idea creator has the benefit of making some money for the technical ideas and to have the opportunity to see their ideas come to reality. However, some necessary steps are required to ensure the idea is not stolen as the Internet offers instant connectivity to millions of people [5]. Take an example of the Kickstarter Website [6], the owner of a project posts the product and many users could see it. Therefore, security is a critical feature of such a system to ensure proper confidentiality and protection of both parties' secret information. Moreover, most of the investors are afraid of the lack of commitment from the idea creator side and that is where the Technovestor comes to ensure the crucial steps have been followed to ensure the idea is properly protected. The responsibility relies on the creator of an idea where he/she must patent the innovate idea in one of the offices located in the Middle East, such as the Ministry of Commerce and Investment (MCI) [7] and Abu-Ghazaleh Intellectual Property (AGIP) [8], to protect their intellectual properties. The Technovestor system also guarantees the idea creator credibility and requires the investment company to provide its commercial registration number to ensure it has an accredited valid business. As (Kramer & Chen, 2010) believe that body text, in research papers, should involves introduction, theoretical framework, methodology, findings, conclusion and discussion, and recommendations.

There are two options to finance an innovative idea; equity and non-equity. Equity is a method that will let investors to invest money in an innovative idea by exchanging shares of stock in the start-up business. Non-equity option is a method that is related to almost any type of financial underlying such as products and rewards. In general, equity investors may be able to offer capital at a lower price because they are able to conduct face-to-face due diligence and thus are better able to assess risk and return. The Technovestor system will support crowdfunding by allowing more than one equity investors to one innovative idea. Crowdfunding can be an efficient approach because when an idea creator's idea is funded by an interested investor, he/she will not need to get debts from banks to implement the idea. The second benefit is that the risk will be shared between the parties involved in funding the innovated idea rather than full funding where the risk of losing fund will be only on the investor who is supporting the complete innovative idea. Moreover, it may be less likely to find an investor who is willing to cover all project costs.

An entrepreneur matchmaking tool may solve some of the problems that exist for both owners of innovative technical ideas and investors to help bringing creative ideas to life. The Technovestor tool is expected to address following problems: First, there is

no easy and automated matchmaking method between an idea creator and investor in the Middle East and that is an obstacle for the technical idea creators in the Middle East. Secondly, for some of the similar systems that exist today, there is no guarantee for the investor that the creator of an idea will commit to constraints of the investment party as well as the protection of the ideas from being stolen. The third problem is that an innovative idea and its details are hard to be tracked, shared, and delivered to the investors physically. The Technovestor project is expected to address all of these problems to not only provide a matchmaking platform but also provide features to start negotiation between parties, protection of funding and ideas, as well as controlled and tracked communication between the involved parties.

Related work

There are several existing tools that perform similar functions that Technovestor performs. This section selects some of the key similar systems and analyzes them for similarities and differences with the Technovestor system.

Zoomaal [7] is a platform to support innovative projects where creators and innovators can submit their projects. The projects must have a funding goal and a deadline. If the idea creators are not able to reach their funding goal by the deadline, all the money will be returned back to the original funders. However, the idea creators are able to divide their goal into milestones by setting their minimum goal, and communicating what they will be able to achieve when they reach the goal. The idea creators can also set other milestones in between the initial and the final goals. The idea creators will be able to collect all the funds that match or exceed the first milestone. After a project is successfully funded using Zoomaal, the idea creator receives the funds and starts executing the project. The idea creator needs to update the project backers with all of the latest news and status about the innovative ideas implementation. Zoomaal system has a good branding with good social activities, the team is responsive and fast, and the system provides necessary documents about every step during the building campaign. The system supports funding by more than one party. The system supports partial funding and tracking of funding. Zoomaal project categories are very broad and not all of them are related to technology. In the Technovestor platform, only innovative ideas which are related to technology will be included.

creative people with people who want to finance these projects. This funding is not a donation but pre-order for products by backers. There are some important details needed to be clarified by the owner of the project such as the minimum funding required in addition to the end date of the project. The owner of the project is allowed to offer several packages to pay from few dollars to up to \$1000. The benefit of the backer is that they will get the product in much lower price, and once it reaches the market the product will be at a higher price. There is no guarantee of the success of the project. If a project fails, then money will be returned to backers automatically. There are several weaknesses of Kickstarter such as the algorithm that will put a project on the top of the list of a category is unknown. The Kickstarter system does not allow partial funding or funding for what has been done. If an idea creator does not reach the eventual goal of the project, all the effort that has been done such as video making and advertising will be considered a failure and the fund will be refunded back. If the project is successful,

Kickstarter will gain 5% of the sale value. In the Technovestor system, the owner of an idea does not have to depend on the backers. The advantage with Technovestor is that companies are involved from the beginning of the project and can decide to support the project or not. In this case, the idea owner does not have to do such extensive work unless it is known that one of the companies is backing the idea. Moreover, Technovestor tool will implement a matchmaking algorithm in order to ensure proper matches and present the result to both idea creators and investors in an ordered list using the best match first approach.

Idea Trade Network (ITN) [8] is about trading of intellectual property. More than 20,000 companies, idea creators, universities and creative individuals from all over the world have already registered with Idea Trade Network (ITN) to promote their innovations to the global market. ITN requires users to pay \$99.9 to register and asks them unnecessary information like their salary and company they work at. In addition, users can post all kinds of intellectual property for sale, including unpatented and patented innovative ideas, crafts, etc. Moreover, the users may promote creative work such as musical and other artistic work, which may make the matchmaking process harder for users. Idea Trade Network differs from the Technovestor in the sense that it charges a new user to pay \$99.9 to register and does not take percentage of any idea trade. However, the Technovestor provide a free registration and does take percentage of any idea matchmaking.

PatentAuction is an online system or marketplace designed only for selling or licensing patented innovative ideas [9]. PatentAuction was designed in 2004, originally under the name Free PatentAuction and, due to its unique conception and focused activity, has quickly become the largest marketplace for patents on the world. Another side of its success is that, from the beginning, its service has been completely free. PatentAuction is a non-commercial marketplace and not for obtaining profit. PatentAuction was only designed to help ideas creators get more support for their patents. PatentAuction allows buyers to contact with the ideas creators and to have a private conversation within the site. When that happens, the site has achieved its goal and it is then up to the parties to come to an agreement and seal the successful deal between buyer and idea creator. PatentAuction is similar to the Technovestor in the sense that both systems have buyers and sellers and offer new innovative ideas. However, PatentAuction differs from Technovestor since anyone can buy the innovative ideas unlike Technovestor which sells the innovative ideas for only trusted companies and individuals. Also, Patent Auction is a free site, whereas, Technovestor is expected to charge fee from both idea creators and investors. Another difference between the two systems is that idea rights are not reserved in PatentAuction since anyone can take the innovative ideas.

Eureeca [10] is a global online crowd investing platform. It was launched initially in Dubai, UAE, and is the first equity platform to launch in the Middle East. It enables members of its investor network, who range from casual and angel investors to institutional firms, to buy shares in growth-oriented businesses while providing operational businesses with crucial access to capital. What makes Eureeca unique is that it builds a regulatory construct that will allow it to support businesses in the whole world. Until now, it has businesses launch funding campaigns from Jordan, UAE, and

Egypt. Similarly, it allows investors in a large number of countries to participate including UAE, Jordan, Singapore, Italy, Norway, Japan, and the UK. The main concept of Eureeca is crowd investment through which startups can collect money by selling stakes to a pool of investors recruited online. Eureeca has four types of investors: Everyday Investor, Advised Investor, Self-Certified Sophisticated Investor, and High Net Worth Investor. Crowd investment platforms differ from crowdfunding sites like Kickstarter, in that they offer investors stakes in businesses rather than products or perks. The concept has been welcomed by both investors and small and medium enterprises (SMEs), as it offers young businesses access to millions of potential investors simply by uploading a video pitch on a crowd investing platform [11]. Eureeca similar to the Technovestor in the sense that both systems take a percentage of any idea matchmaking and completed successfully. Also, provides statistics charts that provide information like what the investor interested in or how many times invested during the week. The difference between them that the Technovestor provide a matchmaking algorithm to ease the process to find investor or idea creator unlike Eureeca.

The first measure is the funding model which is the way how funding is supported in the case of both project success or failure. It has two states: All or Nothing (AoN) and Keep it All (KiA). All or Nothing (AoN) works as follows: when the fund-raising period is over, money is only collected from the backers if a pre-determined minimum amount of money has been pledged. If the goal is not met, no money is collected. Keep it All (KiA) allows all of the funds to be handed over to the entrepreneur whether the project goal is met or not. If the idea creator has insufficient funds to meet the objectives, then it is up to the recipient to refund them to the backers.

The second measure is which idea categories are allowed on the website. The next measure is which countries it covers. After that, allowable budget of the product and who will determine the budget. The fees feature determines whether the tool is free or has a fee for using the system. The measure type of investor compares type and number of investors. The measure communication method identifies the mechanism for the parties to communicate with each other. The next two features are matchmaking algorithm and how the Website will guarantee the idea will be protected.

Table 1 below summarizes the analysis of related systems and Technovestor. The comparative analysis is performed using following features: funding model, main focus or scope of the tool, countries supported, level of budget supported, paid or free system, type of investors, communication method, matchmaking algorithm, and support for the intellectual property.



Table 1 Comprehensive Analysis of Related Systems

Measure\Tool	PatentAuction	Zoomaal	Kickstarter	Idea Trade Network	Eureeca	Technovestor
Funding model	AoN	AoN	AoN	AoN	Unknown	AoN
Focus (category)	Electronics, Health, Chemistry, Human Necessities, Mechanical, Pet products and Software	Animation & Comics, Architecture & Design, Arts, Community, Dance, Education, Environment, Fashion, Films & TV, Food, Games, Live & Social Events, Missions & Endeavors, Music, Photography, Research & Inventions, Software & Web, Theater, Writing & Poetry. Cultural	Arts, Comics, Crafts, Dance, Design, Fashion, Film and video, Food, Games, Journalism, Music, Photography, Publishing, Technology and Theater	Post all types and stages of intellectual property for sale or licensing, including patented and unpatented inventions, trademarks and crafts. You may also promote creative work including literary, musical and artistic as well as photographic and audiovisual works.	Small business enterprises	Technology
Country	All countries in the world	All countries in the world	US, UK, Canada, Australia, New Zealand, the Netherlands, Denmark, Ireland, Norway, Sweden, Germany, France, Spain, Italy, Austria, Belgium, Switzerland and Luxembourg	All countries in the world	Based in Dubai and deals with 36 countries	Middle East



Budget	Negotiation between the seller and the buyer	May not exceed \$25,000	Minimum budget defined by the creator of the project	Price to be negotiated	Buy equity in high-yield potential SMEs	Initial budget is suggested by the idea creator and negotiated with the investor
Fees	PatentAuction is a free site	5% only from successfully funded projects	5% of funds raised to Kickstarter, plus 3% to 5% to Amazon Payments, which processes contributions	For innovators in developed countries, the fee is \$99.95. For innovators in developing countries, the fee is \$9.95.	No fees	5% only from successfully funded projects
Types of Investors	Anyone can buy the patent	Individual supporters	Anyone	Anyone	Four types: Everyday Investor, Advised Investor, Self-Certified Investor, High Net Worth Investor	Accredited companies which include: small and start-up businesses
Communication Method	Visitors may ask ideas creators a question via the link In addition, registered members may also start a negotiation with ideas creators by logging into the system. Every question is sent to	Network online,	Comments and messages via the website	Provide email support	By request meeting, request call, request business plan and message entrepreneur	Messages through website



	ideas creators via the website (invitation to negotiate or question) is both sent to ideas creators by email.					
Matchmaking Algorithm	Unknown	Unknown	Unknown	Directory of Buyers and Sellers is provided	None	Full text approach (A Technique for searching a specified documents in a full text, it is based on meta data or specific words in the document)
Intellectual Property	Rights are not reserved in PatentAuction	The materials are protected by applicable copyright and trade mark law and the laws of the State of Delaware, USA without regard to its conflict of law provisions	Ideas can be stolen if there is no patent	Patents are reserved	Licensed in the UK, Holland, and Malaysia	Ideas creators have to file patents

Technovestor System

This section provides details of the Technovestor system. The Technovestor system is a Web-based tool providing automated matchmaking between creators of ideas and investment parties. The idea creators seeking funding can register and post their technical ideas with the necessary details such as investment requirements. The investment parties may also register and post their desired areas of investment and other requirements such as maximum available budget and expected implementation duration. The tool performs a matchmaking based on the various identified parameters and produces a sorted list using best match first approach for both idea creators and investors. In addition, the tool provides mechanism to ensure protection of intellectual property of idea creators as well as funding from investment companies. The tool also provides integrated communication mechanism for the involved party that can be tracked and stored. The tool has features to allow both parties to review and provide ratings for each other for future effective matchmaking. Finally, the tool provides generation of reports with various data and color coded charts.

Technovestor Users

There are three main users of Technovestor:

a) Admin

The Admin performs administration work of the Website and is responsible for controlling the tool and its users' accounts, modifying pages, verifying authenticities of both parties on registration, and cancelling the contracts.

b) Idea Creator

Idea creator is a user who has a technology related idea. An idea creator may register his/her idea with Technovestor to discover matching investments in order to make the idea as a business product.

c) Investor

An investor is a user who is looking for a technology related idea to invest for productizing the idea. An investor may register his/her investment details with Technovestor in order to seek for appropriate matching ideas and to possibly enter into a contract with an idea creator to convert the idea into a product.

Technovestor Use Case Model

Figures 1 and 2 show the main actors of Technovestor system and the various use cases of the Technovestor system. There are some use cases that are dependent on other use cases. Some rules that are listed in section 3.3 should be satisfied in order to perform those use cases.

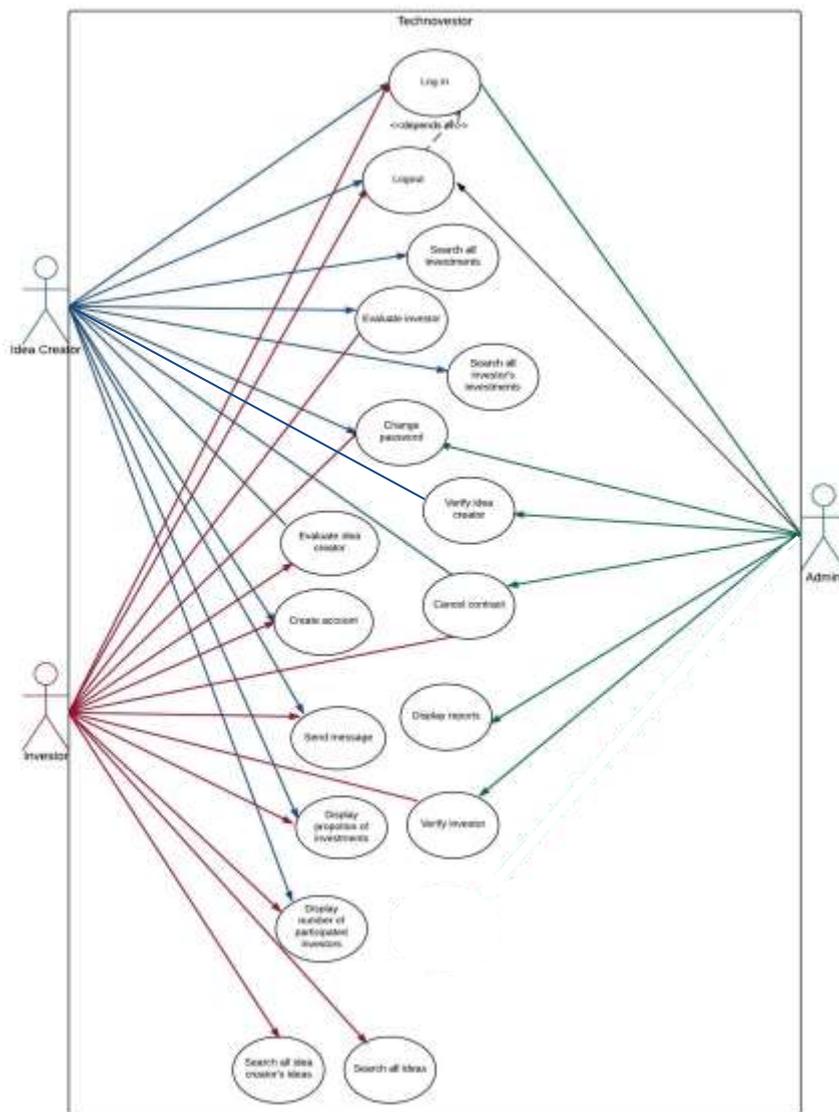


Figure 1 Use Case Diagram for Technovestor Part 1

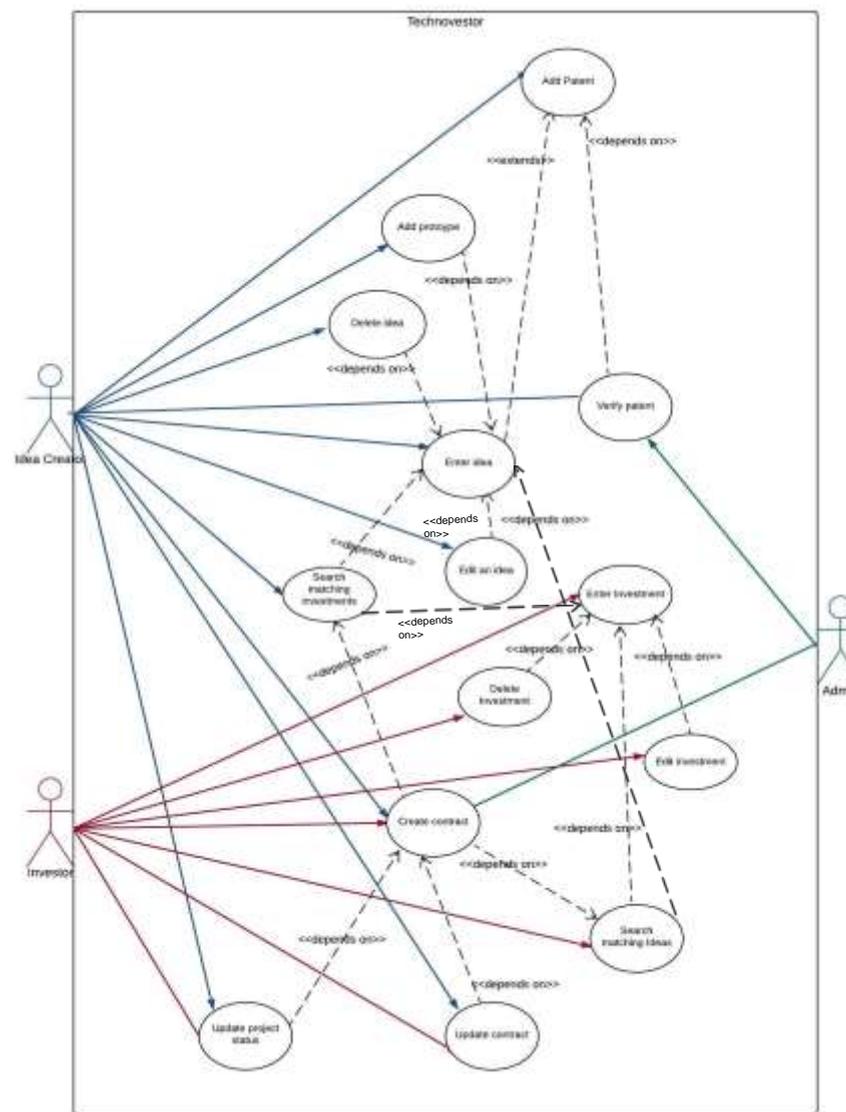


Figure 2 Use Case Diagram for Technovestor Part 2

Technovestor Rules

Technovestor has following operational rules:

1. Users cannot create an idea/investment if their account is not approved by admin.
2. A contract cannot be created before creating an account with the system and getting admin approval.
3. A contract cannot be cancelled by users (idea creator or investor). Both users need to first agree that the contract should be cancelled and then they will send cancel request to the admin who will verify with both parties and then will cancel the contract.
4. When an idea creator adds a patent for his idea, it will be verified by the admin. If the patent is verified to be valid, it will be stored in the system as long as the idea exists; otherwise, it will be deleted from the system.
5. An idea/investment cannot be edited if either is already included in a contract.
6. An idea/investment cannot be deleted if either is already included in a contract.
7. An idea should be added before adding a patent for it.
8. An idea creator cannot search for matching investment if they have not added an idea to Technovestor.
9. An investor cannot search for matching idea if they have not added an investment to Technovestor.

Technovestor Process Flows

Usage flow diagrams show the sequence for performing various tasks in Technovestor. Each diagram shows the tasks for a specific user. Figure 3 shows the admin usage flow. The administrators of the Website are responsible for controlling the tool. The admin usage flow starts after the admin logs in using correct username and password.

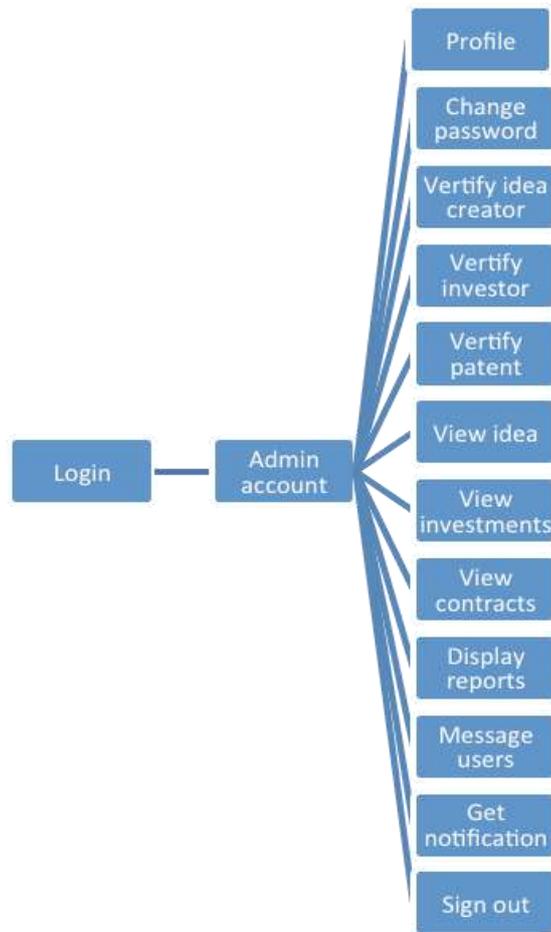


Figure 1. Admin Usage Flow Diagram

Figure 4 shows the Technovestor home page usage flow. The home page usage flow is available to any type of user.

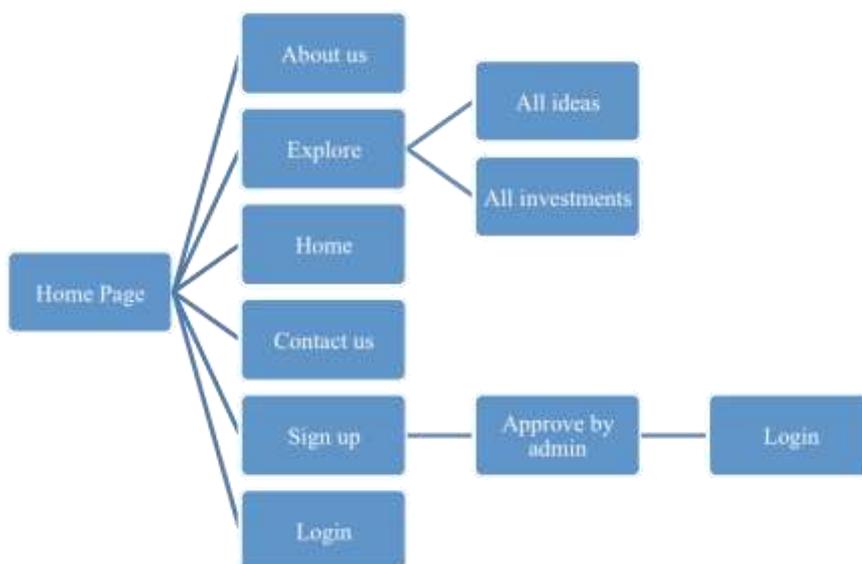


Figure 2. Home Usage Flow Diagram

Figure 5 shows the investor usage flow for investors who are willing to invest and fund the ideas provided by idea creators.

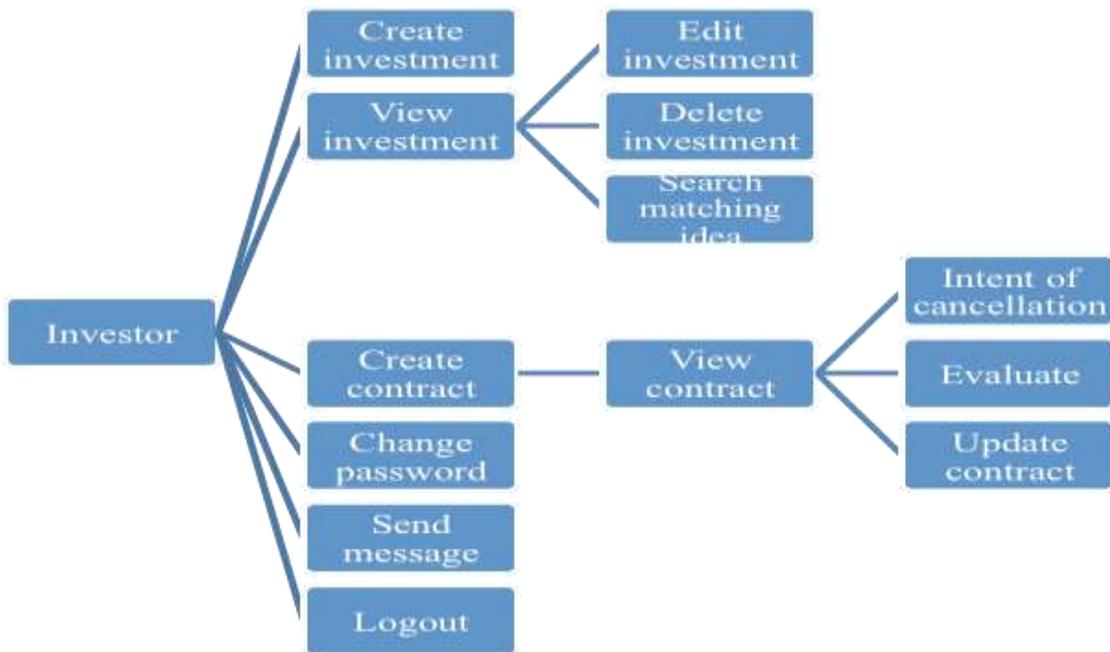


Figure 3. Investor Usage Flow Diagram

Finally, Figure 6 shows the idea creator usage flow for idea creators to submit their product ideas for investment and contract related actions.

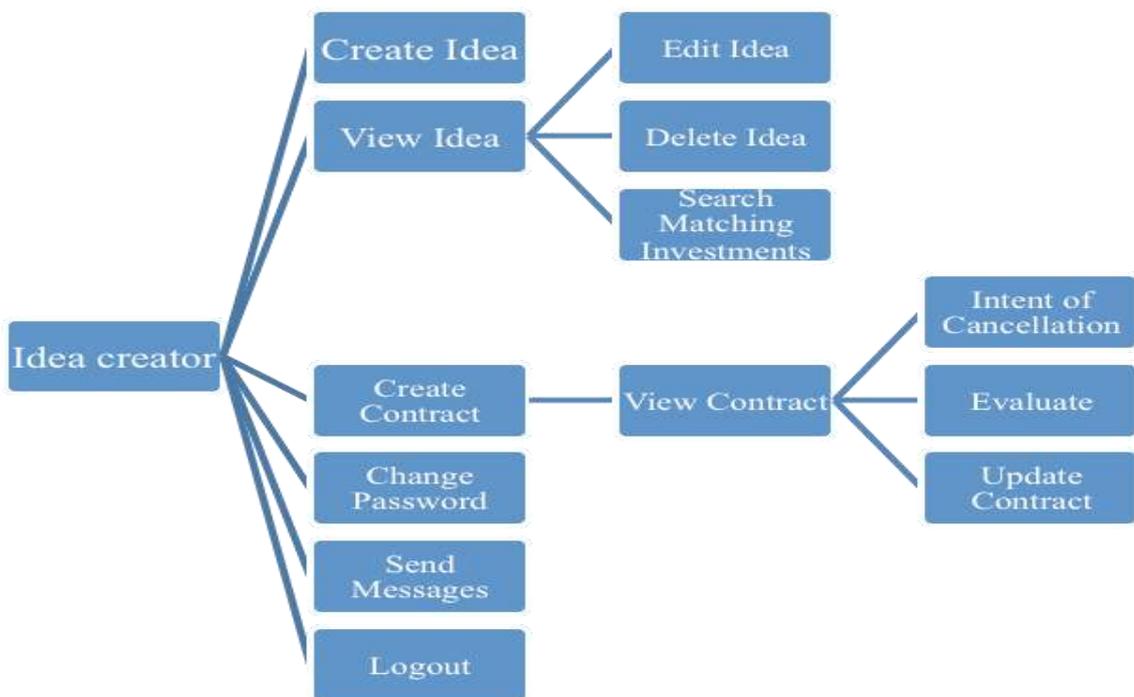


Figure 4. Investor Usage Flow Diagram

Implementation Environment

The front-end of the Technovestor system is implemented using Hyper Text Markup Language (HTML), Cascading Style Sheets (CSS), PHP scripting for server-side Web development, and JQuery for client-side scripting of HTML. The back-end of the Technovestor system is implemented using MySQL as Technovestor data store. In addition, Apache server is used to publish Technovestor Website on the Internet.

Web Interface

This section provides description of the various Web interface features of Technovestor. Figure 7 shows the home page. It is the main page of Technovestor. The home page is visible for any type of user (admin, visitors, idea creator and investors) and provides basic options such as login, sign up, about us, contact us, and an explore feature to see what Technovestor contains.

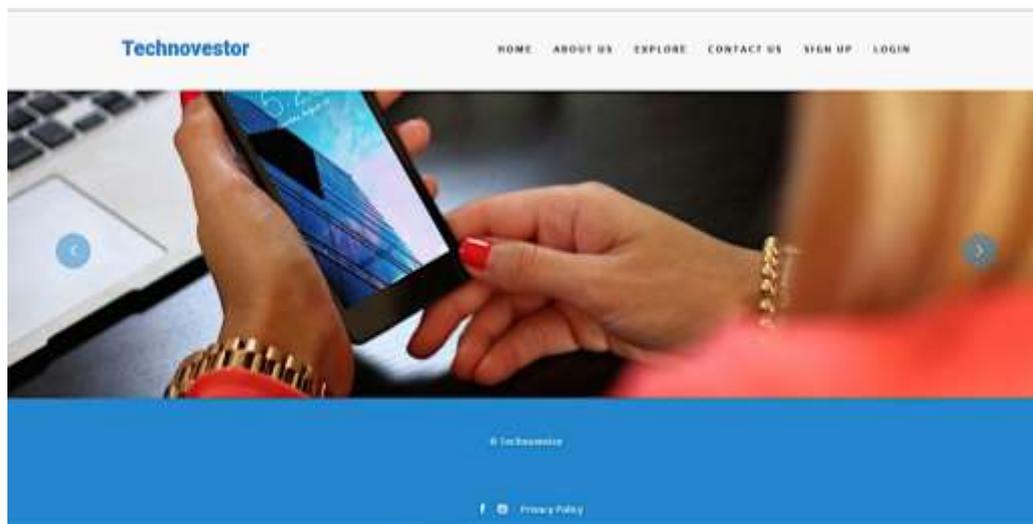


Figure 7. Technovestor Home Page

After a user registers with Technovestor as an idea creator and his account is approved by the admin, he/she may log in to the website to enter an idea along with needed details. The details consist of the following information: idea name, idea category, idea description, proposed project start and end dates, expected budget needed for the project, and optional ability to load any prototype and/or patent for the idea. Once the idea is submitted, it is stored in the Technovestor database and may be searched for potential investments. Figure 8 shows the form for creating a new idea.

Create Idea

Idea Name :

Idea Category :

Prototype : No file chosen

Idea Description :

Start Date :

End Date :

Idea Budget (SRC) :

Add Patent ? :

Add Patent : No file chosen

Patent Expiry Date :

Figure 8. Create an Idea Page

If the user is registered as an investor, he/she can enter investments along with needed details as shown in the form in Figure 9. The details consist of the following information: investment name, technology category, expected project start and end dates, and investment budget. Once an investment is submitted, it is stored in the Technovestor database and may be searched for potential matching ideas.

Enter Investment

Investment Name:

Idea Category :

Start Date :

End Date :

Budget (SRC) :

Figure 9. Enter Investment Page

After entering one or more ideas into Technovestor, an idea creator may search for matching investments using a search form presented in Figure 10. The matchmaking algorithm will use the idea's details such as category, budget, start and end dates and will try to find matching investments in the same category. After the category match, the search algorithm will try to match all investments with the budget same or close to the idea budget with a $\pm 5\%$ variance. After comparing the investments budget and finding investments that satisfies the budget conditions, the algorithm will move to the next step which is comparing the project duration. The investments start and end dates will be compared to the proposed project start and end dates of the idea using a ± 14 day's variance. All matching investment will be displayed in an ordered sequence with the best match first if matching investments were found; otherwise "No matching investments found" message will be displayed. A similar search form and matching algorithm is used for investors to search matching ideas.

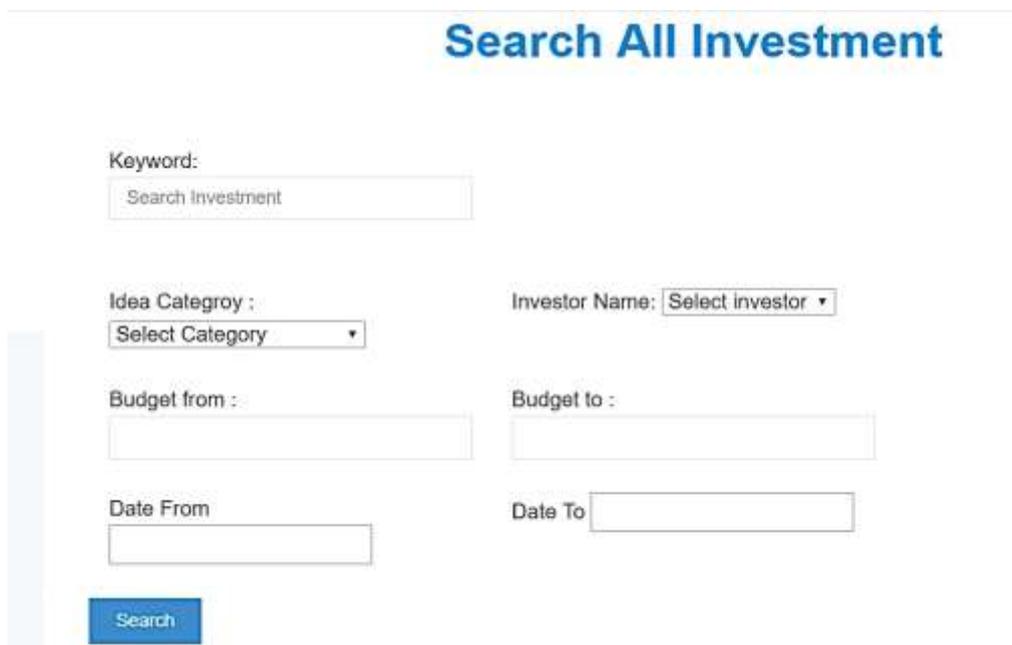


Figure 10. Search All Investments Page

Once matching investments or matching ideas are found and both parties agree to work together, a contract may be created between the two parties using a form as shown in Figure 11. Each contract will have a name entered and a unique identifier assigned by the system. The mutually agreed upon budget and project start/end dates may be entered for the contract. An idea may have up to five investors to allow multi source funding. The multiple investments for an idea will be calculated by dividing each investment along with the specified budget on the contract then multiply by 100. The investments will be shown as percentages in Figure 12.

Contract Form

Contract Name :

Investor Name :

Idea Creator Name :

Idea Name :

Investment1 :

Investment2 :

Investment3 :

Investment4 :

Investment5 :

Budget (SRC) :

Start Date :

End Date :

Additional Conditions and Comments :

Agree on term policy

Figure 11. Contract Page



Figure 12. Proportion of investments

At the bottom of the figure above, there are three buttons that have different functions. The first one from the left is “Update Contract” button for changes on some conditions or requirements such as contract duration or project budget. The second button is “Update Contract Status” for keeping other partners informed about the project status during implementation of the idea. The third button is “Cancel” for sending an intent of cancellation to the admin if there is an issue or disagreement between involved parties. The Technovestor system provides summarized reports for management and administrators of the system. The summarized information from the system is presented in the form of color coded charts. The admin can view the number of users categorized as either idea craters or investors. In addition, the admin can also view the total number of ideas, investments, and contracts in the system. Figure 13 shows sample charts.

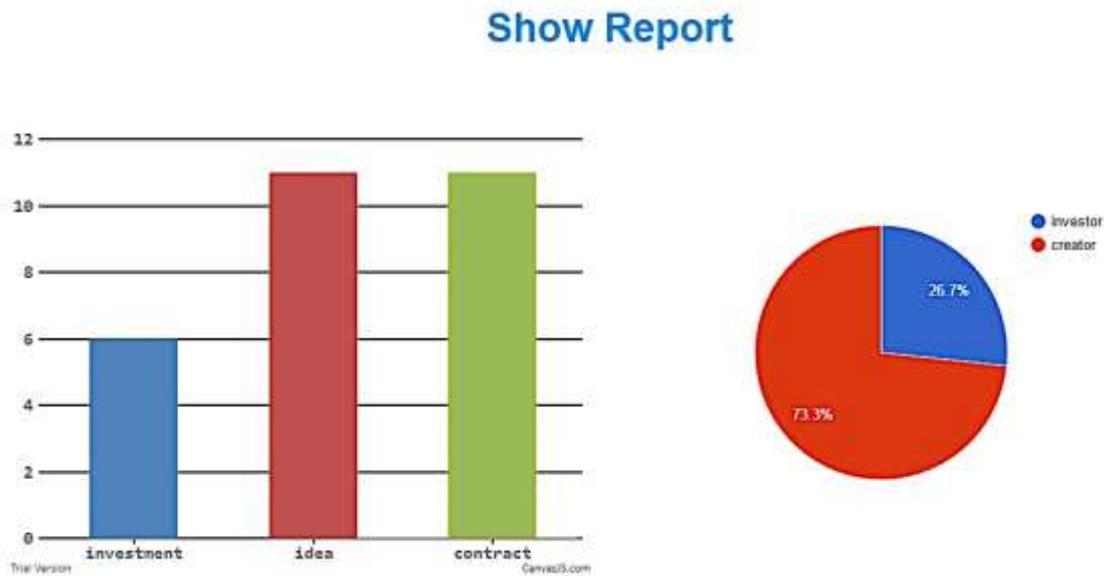


Figure 13. Report Page

Conclusion

A Web-based idea creators and investor matchmaking tool may solve some of the problems that exist for both creators of innovative technology ideas and investors to help bring creative technology ideas to life as real products. The proposed Technovestor tool will allow smart people to move forward and proceed with their interesting ideas by presenting their ideas in a specified way. Furthermore, it helps them to explore companies that are looking to find and fund new ideas to help them get competitive edge over their competitors with unique and innovative products. Technovestor supports crowdfunding concept and allows an idea to be funded by multiple investment sources. Contract creation and management capability is also provided for both idea creators and investors. The output results such as the proportion of investments, the number of investors who participated in the project, and the total outcome of the project are displayed in the form of reports and color-coded charts. In the future, the tool is expected to be continued to be improved by adding more features in the system such as to be an international Website and involving backers who can order the finished products. All these features will add value to the Technovestor system to make it an effective system. The project is also under discussion with the Entrepreneurship and Innovation Office of the College of Computer Sciences and Information Technology at King Faisal University for possibilities of continuing to improve and productize the Technovestor system and to support and contribute to the female entrepreneurship in the Kingdom of Saudi Arabia.

References

- Danish, A. Y., & Smith, H. L. (2012). Female Entrepreneurship in Saudi Arabia: Opportunities and Challenges. *International Journal of Gender and Entrepreneurship*, 4(3), 216-235.
- Entrepreneur. (2015). How to Find and Land Angel Investors. Retrieved September 25, 2016 from: <https://www.entrepreneur.com/article/244872>.
- Grundey, A. (2013). 'Eureeca' moment as crowdf investing brings hope to Mideast startups. Retrieved September 19, 2016, from <http://english.alarabiya.net/en/business/banking-and-finance/2013/12/23/-Eureeca-moment-as-crowdf investing-brings-hope-to-Mideast-startups.html>
- Idea Trade Network. (2013). Seller information Retrieved September 19, 2016, from http://www.newideatrade.com/sell_inventions.htm
- Intellectual Property Rule. (2013). Ministry of Commerce and Investment. Retrieved June 17, 2017, from: <http://mci.gov.sa/en/LawsRegulations/SystemsAndRegulations/Pages/default.aspx>
- Kalinowski, R. (n.d.). How to Sell Ideas Online. Techwalla. Retrieved June 17, 2017, from: <https://www.techwalla.com/articles/how-to-sell-ideas-online>.
- Maher, M. (2014). What is behind Kickstarter? Retrieved June 17, 2017, from: <http://iphoneislam.com/2014/12/whats-behind-kickstarter/42322>
- PatentAuction. (2004). What is PatentAuction.com. Retrieved September 19, 2016, from <https://www.patentauction.com/faq.php?id=1>
- Services (n.d.). Abu-Ghazaleh Intellectual Property (AGIP). Retrieved June 17, 2017, from: http://www.agip.com/page.aspx?page_key=services1
- Suboh, A. (2015). Entrepreneurship In Saudi Arabia. *Forbes Middle East*. Retrieved June 17, 2017, from <http://www.forbesmiddleeast.com/en/entrepreneurship-in-saudi-arabia>.
- Van Osnabrugge, M., & Robinson, R. J. (2000). *Angel Investing: Matching Startup Funds with Startup Companies -- The Guide for Entrepreneurs and Individual Investors*. San Francisco, CA: John Wiley & Sons.
- Zoomaal (2016). How Zoomaal Works, Crowdfunding Platform of the Arab World | Support Arab Creativity. Retrieved September 19, 2016, from <http://www.zoomaal.com/help/how>