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A Case Study of the Extended Interactive Innovation Management Model in Insurance Company

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Abstract: Due to increasing competition, what companies need to do is as important as how they do business. For this reason, companies are focusing on getting better ideas ahead of their competitors and passing them on quickly. Models developed for innovation management, such as technology push, market pull, coupling, interactive and network are being applied and developed in different sectors with different add-ons. The aim of this study is to propose and apply the innovation management framework in an international insurance company and evaluate its results. This framework includes interactive model as the innovation management approach; brainstorming as the creative thinking method, and Delphi as group decision-making method. The volunteers selected from employees of the company among those who are more closely related to the customers. Although 37 of 510 employees are applied to the program, only 22 of them are approved. The volunteers were provided with detailed information on technological trends and trained in innovation management and creative thinking methods. Later, 328 innovation ideas were produced by using brainstorming method. These ideas were presented and consolidated into 62 different ideas, and then the participating volunteers were requested to score the ideas in terms of 5 criteria. The scored ideas were ultimately evaluated by a couple of joint meetings and the 6 ideas are decided by using Delphi method to be offered to the executive's of the company with the detailed feasibility reports and project proposals and those who find sponsors from the executives will be initiated in a program. In this study, the interactive innovation management model was extended to the insurance sector in a novel approach by combining a set of well known methods in an order for different steps. According to the literature, this study is the first in the insurance sector in Turkey, and a subject of study in the world is also increasing. The results obtained in this study are considered to be a guide for researchers working on this field. For further research, it is suggested to consider of granting individual mentorship to employees who are volunteers throughout the innovation management process.

Keywords: innovation management, interactive innovation model, insurance, digital transformation, brainstorming

1. Introduction

1.1 The Role of Innovation in Corporations

With the impact of globalization, the world quickly began to become a single market. The number of firms and consumers who produce and demand similar products is increasing. For this reason, the market is filled with similar and commodity products. Consumers, in this case, prefer price, quality, convenience and ease of payment and delivery, and choose the product that suits them best. For all these reasons, one of the most important factors in the preference of firms is that they constantly innovate and attract consumers with their unusual practices.

Innovation is seen as an important tool for companies that want to survive and grow in competitive conditions (The Boston Consulting Group, 2006). But for companies that want to gain a competitive edge, innovation is not a one-time tool. There is a need for managing the innovation so that innovation can be implemented continuously at every stage of the enterprise and an environment suitable for the realization of innovations. So that the sustainable competition and success depend on innovation management of an organization (Cooper, 1979; Rothwell, 1992; Benedetto and C.Anthony, 1999).

As an important requirement of innovation management, institutions should not expect innovation to come into being spontaneously, but should proactively plan an environment that will lay the groundwork for innovative thinking and work that reveals industry market trends, competition conditions, customer expectations and trends in order to create this environment (Preez and Louw, 2008).

Innovation can be realized in many different areas such as product, process, organization, marketing, etc. However, the innovations are seen very often product and technology-centric. This approach is most probably a result of defining innovation as "the ability to create new value at the intersection of business and

technology" (Davila, Epstein and Shelton, 2007). According to the Oslo Manual, innovation is "a new or significantly modified product (goods or services) or process; a new marketing method; or a new organizational method in business practice, workplace organization or external relations" (OECD, 2005). Although this definition includes organizational and marketing innovations, one of the most basic points in innovation is still focusing on new or improved ideas which can be sold and marketed. On the other hand, measuring and evaluation of innovation are as a complex issue as it is important for companies (Frenkel, Maital and Grupp, 2000).

1.2 The Innovation Management Models

There are many models of innovation management processes in the literature from idea creation to product commercialization (Rothwell, 1992; Trott, 2005; Ning, 2017). Six of them are widely accepted and used in innovation management field such as technology push, market pull, coupling model, interactive model, network model and open innovation.

Technology Push Model usually provides research and product development without making market research, using newly discovered technologies. Touchscreen technology on smartphones is an example of this. Touch screen technology has emerged as a result of work done by EA Johnson in the 1960s. As a result of a series of R&D (Research & Development) activities made in the 1980s, Hewlett Packard introduced a touchscreen computer, and nowadays many touchscreen technologies such as the Apple PDA and the 1996 Apple Palm series are used (V.Ryan, 2013).

Market Pull Model is the innovation process that is triggered by a request for a new product coming from the market or the necessity of resolving a problem. According to this model, the need for innovation is; market research is determined by the requirements of the end or potential customers. Market pull is also starting with the desire of customers to make improvements in existing products. In the 1990s, there was a market requirement for a camera that could take an infinite number of pictures and instantly see the pictures we took. The requirements for this market had led to the development of digital cameras, and the existence of digital cameras has led to the development of photo editing software. Every requirement in the market brings with it the next innovation (V.Ryan, 2013).

Although technology and the market are two distinct driving forces to create innovation, it appears that most of the innovations are formed by the combination of technological and market factors in a creative context. Additionally, most of the failures in the process of creating innovation are based on inability to follow technological trends and to evaluate the market correctly. Although the relationship between science and technology and the constantly changing market is quite complex, it is assumed that it is possible to achieve the success by setting a good balance between technology and market with **Coupling Model** of innovation management (Dodgson and Rothwell, 1995). This balance between technology and market requirements is important at every stage, from the first thought of the idea of innovation to the end of research, design and development work, to the presentation of a new product or process market (Dodgson and Rothwell, 1995). It is a model that recognizes the interaction and feedback systems between different elements and tries to combine R&D (Research & Development) and marketing studies (Preez and Louw, 2008).

Interactive Model suggests that new knowledge has been brought to the point with the help of knowledge already existing in the company (R&D studies, etc.) (Clark and Guy, 1997). Innovation management process emphasizes the importance of relationships among the departments within the company and it is argued that innovation can come from all departments of the company. For this reason, it is stated that the interaction between the units in the company is very important. If the company is looking for technological solutions, it will look at the existing solution proposals, and if this solution does not satisfy the proposal, it will try to bring new information to the market (Fischer, 2001).

The interactive model is a framework that connects "Technology push" and "Market pull" models. There is no clear starting point for the interactive model, like the simultaneous coupling model. Interactive innovation is emerging with the latest developments in science and technology, needs in the society and in the market, and organizational skills. Innovation is not just between R&D or production and marketing, but between science technology and all functions linked to the market (Trott, 1998).

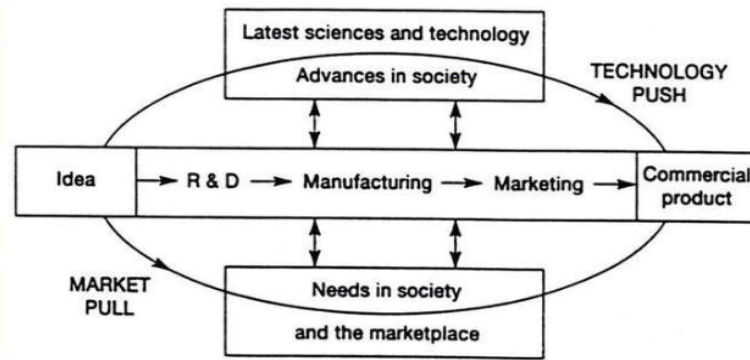


Figure 1: Interactive Model (Rothwell and Zegveld, 1985)

Network Model: According to this model, it is not enough to cooperate only with internal departments for innovation like the interactive model. In addition to internal departments, links with other institutions, universities, research centers, suppliers, and consumers should be established. According to Freeman, the network model "establishes open connections with a group of complementary forces operating on the field, in order to reduce all the great dynamic and static uncertainties that may arise" (Freeman, 1991).

Finally, according to the **Open Innovation Model**, a company aims to make the best use of the ideas of internal and external sources. Companies have the thought to be successful if they only they can best use of internal and external ideas (Preez and Louw, 2008). This model argues that establishing a better business model is more important than entering the market first. In the open innovation model, companies take their technology from many different sources. It is important to be able to benefit from using outsourced information by allowing it to use its own ideas in external institutions as well as by protecting the intellectual property rights. It combines internal and external ideas to advance the development of new technologies for the market.

1.3 The Role of Creative Thinking in Innovation

There are three key points to be aware of during the innovation process, i) identifying and understanding the problem, ii) finding ideas that can solve the problem, and to selecting the most appropriate one among all ideas (Modlin, 2015). In order to solve a problem, it is necessary to determine the possible solutions to the problem that can be detected and identified first. At this point, there is an important role of creative thinking methods. When it is necessary to be decided as a group, the brainstorming method is used when the group members are concerned about not being able to express their ideas freely due to the hierarchy and when we have little time to make a decision (Rawlinson, 2017). Some researchers have argued that brainstorming is the best tool for group idea production (Isaksen and Gaulin, 2005). Other popular group decision-making methods include Delphi (Chan et al., 2001), Rank Order Centroid (RoC) (Edwards and Barron, 1994) and Ratio Method (Weber and Borcharding, 1993). One of the important elements of creative thinking is to get support from methods of finding unique and new ideas during individual thinking. At this point, methods such as lateral thinking (Bono and Zimbalist, 2010) and morphological analysis (Hubka and Eder, 2012) may play an important role as well.

The aim of this study is to apply the interactive innovation management model in a case study with the selected employees who have close relation with the customers after supporting them with detailed information and trainings to enable them to produce innovative ideas in an effective way.

The next organization of the paper is as follows. Chapter 2 emphasizes the necessity of the insurance sector as well as the fact that it is in other sectors to establish a culture of innovation management. It is mentioned that the importance of innovations in the insurance sector is increasingly recognized today and the studies in this domain have been included. It is pointed out that the number of studies in insurance domain is still low and more information needs to be revealed. In Chapter 3, our case study in the insurance domain has been elaborated in detail. The results obtained were analyzed in Section 4.

2. Problem Definition

As in other domains of the sector, the insurance domain is in search of development and improvement of methods, processes, tools, and products because of the dynamic natures of the environmental factors such as

consumer, customer, competitor, and technology (Mills and Tubiana, 2013). It is clear that the spread of innovative thinking culture in insurance institutions is necessary to provide these innovations and to catch up the time.

Today, the insurance industry seems to be moving slowly but steadily on innovation management. Most insurance companies are very concerned about the innovation management stage in order to make long-term investments (Modlin, 2015).

It is observed that studies on innovation management in the insurance domain are very few. In a small number of these studies, Preez and friends aimed to sell innovative insurance products through new distribution channels (for example using smartphones), targeting low-income markets in an effort to innovate in the insurance industry. They have used the brainstorming method to find innovative ideas for this purpose. By combining ideas from different categories, they have defined various new concepts. They have taken a feasibility report for each of the concepts that they have developed and tried to develop the project by way of these concepts. Since the projects have not yet ended at the time of publishing, there is no clear information about the results of the work. But they say that they have come a long way since they first described innovation (Preez and Louw, 2008).

In the literature, no other studies related to innovation management have been found in the insurance sector, indicating that there is very little work to be done in this area. This study was carried out in an international insurance company in Istanbul, Turkey (Sompo Japan Insurance, Turkey) and proposes a practical framework for innovation management that we hope will contribute to the lack of innovation management in the insurance domain.

3. Methods

Our study consists of 8 steps covered in the following headings, are shown in Figure 2.

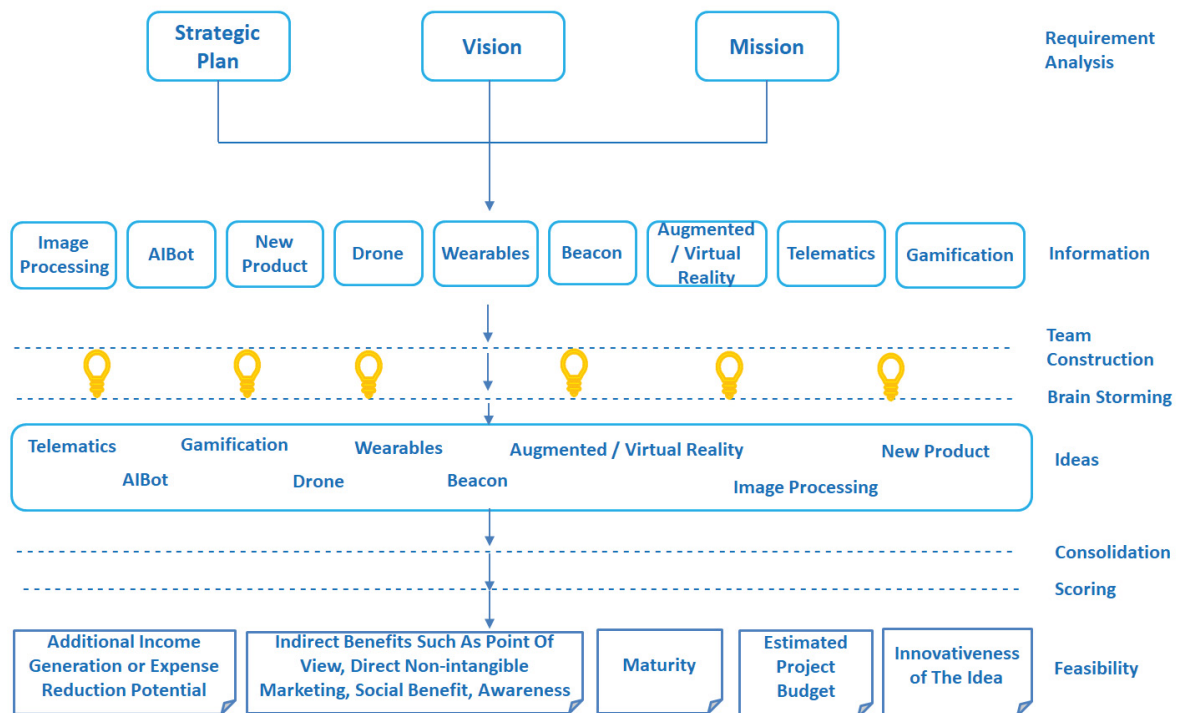


Figure 2: The framework of the extended interactive innovation management model

As described in the literature for the interactive innovation management model; the latest developments in society and technology should be determined and the expectations of the society and the market should be perfectly met. The produced innovative ideas should be in the technological areas which can be determined after a requirement analysis (Rothwell and Zegveld, 1985).

Basically in this study, first by considering the strategic plan, vision, and mission of the insurance company, the current situation and requirement analysis are carried out. As a result of the requirement analysis, the technological areas are determined by which there should be innovative studies will be made. Then we have informed the employees about the 9 technologies that we have set as a result of the negotiations we had with company executives at the beginning. They employees are asked to produce ideas that they can apply in their businesses. After a couple of trainings, teamworks and brainstorming, 328 ideas were produced. Then the ideas were scored with respect to the criteria based on strategic objective of the company and then consolidated. Finally the feasibility reports were issued for the selected most appropriate ideas. The result of these stages brings 6 ideas to be applied, produced and/or commercialized. Since the production and commercialization process will take too much time, we have not included this part in our study.

3.1 The Requirement Analysis with Executives m

Every new project, product, and activity in the workplace comes to meet a business requirement (Business Requirements Analysis, 2015). Many studies show that the main reason for project failure is the lack of product requirements or the lack of necessary support (Kumar, 2006). Today, many organizations believe that management requirement analysis will increase the likelihood of project success.

Requirement analysis also referred to as requirement engineering in the literature, aims to meet customer expectations with new or significantly modified products (Wohlin and Aurum, 2005). It is believed that making decisions by conducting requirement analysis before management of any project will contribute significantly to meet business objectives by managing project scope and costs.

Although direct involvement of executives in the process of creating a vision for innovation is an important element, it is more valuable for companies to work as widely as possible in their innovation development work (Mills and Tubiana, 2013).

For this reason, in our study, we first performed a comprehensive requirement analysis with the company executives. During the requirement analysis conducted by the executives, it was discussed the expectations of the customers and what they could do to meet these expectations. During these meetings, it is confirmed that the employees rather than executives who are directly conducting with the customers are more capable of understanding and describing the customer expectations in detail. For this reason, the interactive innovation management model (Fischer, 2001) has been preferred by providing an effective communication and interaction environment among all departments.

3.2 Increasing the Knowledge Capacity of Employees

Another characteristic of the interactive innovation management model is that it acknowledges that innovation will build on the company's existing knowledge (Clark and Guy, 1997). In addition, it is very important that employees are willing to contribute the study in terms of productivity. For this reason, weekly technology bulletins such as Telematics, AlBot, Gamification, Drone, Wearables, Beacon, Augmented / Virtual Reality and Image Processing were prepared and shared with all employees for 2 months in order to increase the knowledge of the employees and to identify the volunteers. On this page, although an interactive model was chosen as the innovation management model, it also benefited from some elements in the Coupling innovation management model (Preez and Louw, 2008), by providing information on technology trends for employees with extensive knowledge of customer expectations.

All those studies are coordinated by the digital transformation office of the insurance company. It is often reminded by the same office via e-mails that the purpose of preparing the bulletins is to produce and implement innovative ideas in these areas. Apart from this, all employees were asked to think about innovations in technological areas that said 'how good it would be if this innovation was done on this field,' and these ideas were collected through an online questionnaire. This method is very similar to the recommendation of constructing a sentence with "*I wish ...*" as a catalyst by La Sella (Salle, 2008) in order to create innovative ideas.

It is anticipated that the ideas of innovation to be revealed will be in line with the institution's strategic objectives. For this reason, the vision, mission and strategic objectives of the company have been shared with all employees during this stage.

3.3 Selecting the Candidates

The on-line questionnaire mentioned above is used to identify candidates who will voluntarily participate in innovation management activities. Employees in the questionnaires were asked whether they wanted to be included in the innovation study and were asked to select one of the technological themes previously announced in the bulletins for innovation work. Employees are also given the opportunity to choose this technology and write it down if there is a proposed innovation in the technology field.

Following the collection of these preliminary requests, the approvals are requested from the managers of the employees for spending the required time for the relevant work.

Being able to experience a comprehensive innovation management process has been an important motivation for employees in this study. In addition, a number of in-house and out-sourced training opportunities to contribute to personal development were also presented.

The number of applicants to participate in the first stage is 37. 5 of candidates are interested in drone technology, 10 in gamification, 4 in Albot, 4 in wearables, 6 in new products, 4 in telematics, 3 in image processing, and 1 in beacons technology.

3.4 Training and Workshops on Creative Thinking Methods

22 of 37 volunteers are accepted to involve in two training sessions, called "Innovation Groups Initial Training". In the first session of the training, science, technology and innovation concepts, technology and innovation management issues were discussed and types of innovation (based on Oslo Manual (OECD and EUROSTAT, 2005)) were explained. There was also an interactive training on creative thinking techniques. In the second session, the technological newsletters were sent back to the participant readers, and the details of the technology and examples of applications in the world were shared. In this way, both the conceptual plane of the participants has strengthened; as well as the knowledge about the technology they would produce innovative ideas.

3.5 Gathering the innovation Ideas

In order to obtain more concrete and valuable suggestions from the voluntary employees involved in the innovation management process, the brainstorming method has been applied.

Brainstorming is the best tool known for group idea production (Isaksen and Gaulin, 2005). The brainstorming method is preferred since we try to make the search for solutions easier by starting from the maximum creative ideas that will be released during the group discussion method.

Basic idea behind the brainstorming method; the greater the number of ideas about a given problem, the more likely it is to find the most appropriate solution (Litchfield, Fan and Brown, 2011).

A comfortable, peaceful and authentic environment was created for the participants to the idea production phase. In order to conceal their ideas, they are guaranteed that they will not be subjected to inappropriate or unfavourable criticisms, even if their unconventional ideas are absurd to other members and executives.

The study was applied in a medium-sized meeting room. Elements to distract the participants were removed from the room. In order to make them feel comfortable, a friendly atmosphere was created and tea and coffee treats were offered.

In addition to the 4 moderators, two different sessions were organized with 17 volunteers as 4 groups using the idea sheet method in the brainstorming study. In the first session, ideas about Albot, telematics, gamification and drone technologies were produced; while ideas about wearables, beacon, image processing, new products, and Augmented / Virtual Reality technologies were produced in the second session. The ideas produced after the two sessions were put together in an online environment.

As a result of brain storming, 328 ideas were produced. Of these ideas, 59 are about Albot, 35 are telematics, 32 are Gamification, 33 are Drone, 11 are Wearables, 40 are Beacon, 34 are Augmented / Virtual Reality, 45 are Image Processing technologies and 39 are New Product.

3.6 Consolidating the Innovative Ideas

During the brainstorming sessions, it is possible to produce similar ideas by different groups for the same subject. Even so, this situation has been taken to ensure diversity. However, this situation requires a good consolidation of ideas produced. To do this, 328 ideas produced primarily are classified according to technologies. The ideas have been read by the moderators and the similar ideas are merged.

After the process of consolidating ideas, 62 different ideas were obtained. Of these ideas, 7 are about Albot, 5 are telematics, 5 are Gamification, 8 are Drone, 5 are Wearables, 4 are Beacon, 6 are Augmented / Virtual Reality, 8 are Image Processing, and 14 are New Product.

3.7 Scoring the Innovation Ideas

After the ideas were consolidated, the digital transformation office also asked from the volunteers to evaluate all consolidated ideas based on the following criteria by an online questionnaire:

- Potential of Additional Income Generating or Expense Reduction (Multi / Medium / Low).
- Indirect Benefits such as Marketing, Social Benefit, Awareness (High / Medium / Low).
- Estimated time period to apply (Long: 18 + Month / Medium: 6-18 Months / Short: 1-6 Months).
- Estimated project budget (Much: > 500,000TRL / Intermediate: 500,000-100,000 TRL / Less: <100,000 TRL).
- Innovativeness (Very / Medium / Less).

After this online evaluation, all candidates were invited to evaluate the scored ideas again. In this evaluation, the scores of the ideas were shared with the participants. So that the most innovative, the most revenue-generating, the shortest time requiring, etc. ideas can be sorted and then discussed and re-scored very easily by the volunteers.

3.8 Feasibility Studies of the Innovation Ideas

The projects are then sorted with respect to the ranks which were created with respect to the above criteria. The Digital Transformation Department of the company made a feasibility study on the top 10 of the innovative ideas and found 6 of them feasible to be projected and offered to the executive of the company.

4. Result and Discussions

Innovation studies are crucial in order to grow and survive in today's competitive conditions (The Boston Consulting Group, 2006). The importance of innovation for companies in the world is being recognized day by day, and the development and applications of innovation in different sectors are increasing.

As is the case in other sectors, the insurance industry also recognizes the need to disseminate innovation culture and the need for innovative practices (Insurance Industry Innovation Consulting Solutions, 2017); (Mills and Tubiana, 2013). But despite that as a result of the extensive literature search, the lack of studies in the insurance sector is noteworthy.

In the field of innovation, studies are carried out in various sectors. There are various innovation management models (technology push, market pull, coupling model, interactive model, network model and open innovation) and these innovation methods are applied differently in different sectors (du Preez and Louw, 2008).

Interactive innovation management process in this study was applied to an international insurance company that has been serving the insurance industry; preliminary steps for the implementation of innovative ideas are carried out.

Our work with volunteers working at SOMPO Japan-Turkey Company was completed in 10 weeks. The company has a total of 510 employees and 22 people volunteered working in different departments.

The most important feature that differentiates this study from other innovation applications is that the interactive innovation model has been implemented in an insurance company with the collaboration of executives and employees by using a set of well-known methods in a special order starting from the

requirement analysis and idea generation to the evaluation of the ideas. Additionally, the idea generation is based on only the predetermined technologies which are decided with respect to the requirement analysis. Later ideas were scored and a feasibility report was presented again from the most appropriate ones. As results of all these studies, 6 of 328 ideas are determined that can be realized. These 6 ideas are in the process of passing on to the company.

Table 1: The numbers of ideas in different stages of the study

Technologies	Gathering the Ideas		Consolidation and Scoring	Feasibility
	Suggested Ideas In the on-line Survey	Generated Ideas by Brainstorming	Scored and Evaluated Ideas	Feasible Ideas Presented to the Executives
Image Processing	3	45	8	0
AlBot	4	59	7	2
Beacon	1	40	4	1
Gamification	10	32	5	2
Drone	4	33	8	0
New Product	5	39	14	1
Telematics	4	35	5	0
Virtual Reality	0	34	6	0
Wearables	4	11	5	0
TOTAL	35	328	62	6

It has been observed that volunteers have a high level of motivation during the whole stages. After this study, the company has initiated a series of training activities for improving the capacity of the employees in different skills, such as customer relations, effective communication, marketing, etc.

The interactive innovation management model that is proposed to the company will be continuously applied by the digital transformation office of company by considering the policy and strategic objectives in the coming years.

This study is the first study based on literature in the insurance sector in Turkey, and one of the rare examples in the world began to appear recently. From this point of view, this study is considered to be a guide for the researchers who will work in this domain.

However, according to our observations during the study, it is evaluated that it would be beneficial to offer individual mentorship to volunteers about technology and innovation management, creative thinking methods and commercialization will be very beneficial in the future works.

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