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EXPLORING THE PROJECT MANAGEMENT CAPACITY OF SMALL AND MEDIUM-SIZED ENTERPRISES: A RESEARCH ON INFORMATION TECHNOLOGY COMPANIES IN IZMIR, TURKEY

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ABSTRACT

EXPLORING THE PROJECT MANAGEMENT CAPACITY OF SMALL AND MEDIUM-SIZED ENTERPRISES: A RESEARCH ON INFORMATION TECHNOLOGY COMPANIES IN IZMIR, TURKEY

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This research aims at investigating the capacity of project management in Small and Medium-Sized Enterprises (SMEs) by focusing on SMEs in the Information Technologies (IT) sector of Izmir, Turkey. The main objective is to analyze the implementation of project management principles in our sample group. Besides the management process, this research also reveals technical possibilities and economic opportunities through the prepared in-depth interview questions, and the interactions of these essential elements with each other. Only the SMEs working in the IT industry were picked as a target population of this study and a sample group was created. These SMEs are located especially in technoparks and business centers and a list was prepared based on the web search. SMEs were contacted via LinkedIn and project managers or entrepreneurs were selected as a contact. A short brief that explained the research objective was shared via direct message and interviews were scheduled with responding SMEs. The face-to-face interview was selected as a data collection method and it ensured direct communication with interviewees. Thanks to face-to-face interviews, the in-depth interview questions were able to clarify as may be required and the misunderstanding risk was reduced. The project management process in SMEs is analyzed with a detailed examination and comparison of the organizational structures of companies. Before the project management process, the distribution of responsibilities or roles is revealed by comparing SMEs and large companies. As a result of this comparison, guidelines are given on how entrepreneurs will choose the methods they need to apply during the establishment phase. A detailed explanation was provided on how project management is indispensable in

business life from past to present and in which areas it directly affects efficiency. This study also examines the digital tools that are used in the project management process both internally and externally. The most preferable tools and applications are considered on a preferential basis by their features and benefits. In addition to that, statistical results show that entrepreneurs directly affect the Turkish economy and offer new employment opportunities by taking financial supports and government grants. Furthermore, the result of this research shows that SMEs in the IT sector widely use digital tools since they already realize the importance of technology in the 21st century.

Keywords: small and medium-sized enterprises, Turkey, project management, information technologies, project management capacity.

ÖZ

KÜÇÜK VE ORTA ÖLÇEKLİ İŞLETMELERİN PROJE YÖNETİMİ KAPASİTESİNİN ARAŞTIRILMASI: İZMİR, TÜRKİYE'DE BİLGİ TEKNOLOJİLERİ ŞİRKETLERİ ÜZERİNE BİR ARAŞTIRMA

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Bu araştırma İzmir, Türkiye'de Bilişim Teknolojileri (BT) sektöründeki Küçük ve Orta Ölçekli İşletmeleri (KOBİ) hedef alarak, KOBİ'lerdeki proje yönetimi kapasitesini araştırmayı amaçlamaktadır. Temel amaç, örneklem grubumuzda proje yönetimi yöntemlerinin uygulanmasını analiz etmektir. Yönetim sürecinin yanı sıra, derinlemesine hazırlanan mülakat soruları ve bu temel unsurların birbirleri ile etkileşimleri yardımıyla bu araştırma, teknik imkanları ve ekonomik fırsatları ortaya koymaktadır. Sadece bilişim sektöründe faaliyet gösteren KOBİ'ler bu çalışmanın hedef kitlesi olarak belirlenmiş ve bir örneklem grubu oluşturulmuştur. Bu KOBİ'ler özellikle teknoparklarda ve iş merkezlerinde yer almaktadır ve internet araştırması sonucunda bulunup seçildiler. KOBİ'lere LinkedIn aracılığıyla ulaşıldı ve proje yöneticileri ya da girişimciler irtibat olarak seçildi. Araştırma hedefini açıklayan kısa bir özet doğrudan mesajla paylaşıldı ve olumlu geri dönüş yapan KOBİ'lerle görüşmeler planlanlandı. Veri toplama metodu olarak yüz yüze görüşme yöntemi seçildi ve mülakat yapılan yetkililerle doğrudan iletişim kuruldu. Yüz yüze mülakatlar sayesinde, ayrıntılı mülakat soruları gerektiğinde detaylandırılabildi ve yanlış anlama riski mümkün mertebe azaltıldı. KOBİ'lerde proje yönetimi süreci, şirketlerin organizasyon yapılarının detaylı incelenmesi ve karşılaştırılması ile analiz edilmektedir. Proje yönetimi sürecinden önce, KOBİ'lerin ve büyük ölçekli şirketlerin karşılaştırılmasıyla sorumlulukların veya rollerin dağılımı ele alınır. Bu karşılaştırmanın sonucnda elde edilen verilere göre, girişimcilere, şirket kuruluş aşamasında uygulayabilecekleri en ideal yöntemleri nasıl seçeceklerine dair yol gösterilmiştir. Proje yönetiminin geçmişten günümüze iş hayatında vazgeçilmez

olduğu ve hangi alanlarda verimliliği doğrudan etkilediği konusunda ayrıntılı bir araştırma yapılmıştır. Bu çalışma aynı zamanda proje yönetim sürecinde hem şirket içerisinde hem de müşteri ve paydaşlarla iletişimde kullanılan dijital araçları inceler. En çok tercih edilen araçlar ve uygulamalar, özellikleri ve avantajları ile değerlendirilir. Buna ek olarak, istatistiksel sonuçlar girişimcilerin Türkiye ekonomisini doğrudan etkilediğini ve mali destek ve devlet teşvikleri alarak yeni istihdam fırsatları sunduğunu göstermektedir. Ayrıca, bu araştırmanın sonucu, bilişim sektöründeki KOBİ'lerin 21. yüzyılda teknolojinin öneminin farkında olduklarından yaygın olarak dijital araçlar kullandığını göstermektedir.

Anahtar Kelimeler: küçük ve orta ölçekli işletmeler, Türkiye, proje yönetimi, bilgi teknolojileri, proje yönetimi kapasitesi.

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Sinem YARAŞGİL

İzmir, 2020

TEXT OF OATH

I declare and honestly confirm that my study, titled “Exploring the Project Management Capacity of Small and Medium-Sized Enterprises: A Research on Information Technology Companies in Izmir, Turkey” and presented as a Master’s Thesis, has been written without applying to any assistance inconsistent with scientific ethics and traditions, that all sources from which I have benefited are listed in the bibliography, and that I have benefited from these sources by means of making references.

Sinem YARAŞGİL

Signature

May 7, 2020

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Introduction

Project management has been accepted as an essential element of business life since the 1950s. Numerous researches have been conducted on the fact that it is a process that all companies need to apply, regardless of the SME or corporate. Rapid developments in Information Technologies (IT) sector have directly integrated to the internal processes of companies developing products in this sector. Hence, the awareness of using project management and project management tools in these companies is a very intriguing question. Although, the variables on this subject are many, the number of researches and the developed methods are quite high, so that the effects can be handled one by one.

Financial conditions are one of the most important variables for SMEs and other companies as well because money flow required ensuring company continuity. However, especially in the establishment period, enterprises may have financial difficulties so, that requires a quite detailed budget planning and setting priorities. These priorities and key points are specified by researchers and business managers. Despite the fact that specific methods, schemes, charts and structures are already developed, they must be reconfigured according to the company profile. So, company profiles may be accepted unique just like people and they definitely should be customized before applying it in the firm. That means, extra workload and even extra charge if there is not any distribution of responsibilities. Thus, the importance and deficiency of being a physical and real project manager at the beginning of the project becomes clear.

IT industry in Turkey is an emergent market which is trying to break its foreign-source dependency. Having a great number of developers in Turkey speeds up the process and alternative applications and new ideas are constantly being developed. As the number of IT companies increases, the competition increases as well. So, using project management software in almost all markets and companies in some way ensures these IT companies to directly affect the Turkish economy. The success of the IT industry that affects the hot money flow domestically so much has considerable importance. According to the data to be obtained as a result of the project management awareness research in these companies, the subjects that processes and methods are flawed can be addressed and fixed.

- **Literature Review**

Shokri-Ghasabeh (2009) defined the project management success factors as relative concepts which are changed in years. Besides this perception differences, project managers, system analysts, sponsors and users all have particular role in project success. While defining the success of IT projects, Wateridge (1997) has created additional criteria for the project success in the literature and gained a different perspective based on the questionnaires:

- Inadequacy in incorporating the views of all stakeholders in the project,
- Project managers applying factors badly or applying wrong factors,
- Perceived success of a project (satisfied key people on the project),
- Unrealistic timescale

Cooke-Davis (2002) expressed that there is a difference between project management success and defined them as below:

- Project success is a corporate context and includes practices and performances.
- Project management success is gathering up of project & programme management and operations management.

Although many researchers who research on successful project criteria for SMEs have different perspectives, key factors could be identified (Meister, 2006).

Table.1: Key factor of Project Success

1 Project mission	Clearly defined goals and general directions
2 Top management support	Willingness of top management to provide the necessary resources and authority/power for implementation
3 Schedule/plans	Detailed specifications of individual action steps for system implementation
4 Client consultation	Communication, consultation and active listening to all parties
5 Personnel	Recruitment, selection and training of the necessary personnel for implementation
6 Technical tasks	Availability of technology and expertise to accomplish specific technical steps
7 Client Acceptance	Selling the final product to its ultimate intended user
8 Monitoring and feedback	Timely provision of comprehensive control

	information at each stage
9 Communication	Provision of an appropriate network and necessary date to all key stakeholders
10 Troubleshooting	Ability to handle unexpected crisis and deviate from plan.

Source: Meister, W. (2006). Successful project management for small to medium enterprises (SMEs) Paper presented at PMI® Global Congress 2006—Asia Pacific, Bangkok, Thailand. Newtown Square, PA: Project Management Institute.

- **Aim of the Research**

This research aims to reveal capacity of project management in SMEs in order to demonstrate how properly the processes considered as a key factor in project factor applied. IT industry is chosen as research area and they are addressed according to both organizationally and methodologically. As for the organization, firm's project management staff plan is analyzed and sketchy company profile is prepared. In active projects, the titles and responsibilities of the people involved in process management are searched whether they are parallel and exclusive. A quick retrospective is made by asking the right questions and companies are directed to make innovative initiatives with an objective perspective. Also, how efficiently they manage the project management process they are in the implementation phase will be examined especially financially. Especially, their budget and considering the economic conditions of Turkey, data is obtained indirectly whether or not positions are opened for project manager / program manager / product manager titles in SMEs. In addition, this collected information explains how consciously the SMEs are structured and which hierarchy is applied within the company.

As for the IT companies, in recent years, the applications and software that have been added to the project management process as essential elements and usage rate of instant messaging tools that provide healthy communication within the team members are calculated and evaluated. The regular monthly budget allocation of companies for these applications, which are mostly paid, shows how much they attach importance to project management.

Especially, in the last decade, at what rate they benefited from the financial funds provided to entrepreneurs by Turkey and are examined whether it is sufficient.

- **Research Method**

The main objective of this research is to analyze the implementation of project management principles in our sample group. Besides the management process, this research also reveals technical possibilities and economic opportunities through the prepared in-depth interview questions, and the interactions of these essential elements with each other.

In this research methodology, a detailed desk research on SMEs' share in Turkish economy was done. So, it was realized that SMEs could turn this share into a colossal advantage for economic development by managing their resources more efficiently. The more precise data would be acquired if the research subject is more specific. So, the IT industry was selected as a vertical business. After years of working in the IT industry, having comprehensive knowledge of the sector and determine the deficiencies would be easier. Therewith, a literature review on SMEs' actions and circumstances in the IT industry had been made. This literature review aimed to specify major deficiencies and issues then, main points would be determined to focus on.

In the IT industry, achieving a spectacular success is directly related to successful process management. Basically, hardware and software solutions are produced to meet the market or customer needs, and as in many other industries, these solution development processes are gathered under a single roof called project management. So, project management was selected as an essential point of this research, and with this core objective, project management processes of SMEs had been held under the microscope. Owing to the literature review and gained work experiences in business life, in-depth interview questions were prepared and grouped as profile, project management applications, and complementary questions. To obtain different outcomes and get a full picture of SMEs, both quantitative and qualitative question types were used together in the in-depth interview questions. Six of these twenty-six questions were prepared as quantitative and the rest twenty were as qualitative.

Only SMEs working in the IT industry and located in Izmir was identified as the target population of this study and a sample group was created. Izmir is the third most populous city in Turkey. Even both Izmir and Istanbul are metropolitan cities, Istanbul is always accepted as Turkey's economic center. Due to the large population and high competition between businesses, SMEs have started looking for new location alternatives for a while. So, these entrepreneurs that are worried about

reducing the market share of the business have tended to other large cities in Turkey. Due to this reason, this research was aimed at the circumstances of emerging marketing in Izmir.

These SMEs are located especially in technoparks and business centers and a list was prepared based on the web search. SMEs were contacted via LinkedIn and project managers and entrepreneurs were selected as contact. A short brief that explained the research objective was shared via direct message and interviews were scheduled with sixteen responding SMEs. The face-to-face interview was selected as a data collection method and it ensured direct communication with interviewees. Thanks to face-to-face interviews, the in-depth interview questions were able to clarify as may be required and the misunderstanding risk was reduced. Each of the interviews with a total of sixteen SMEs took approximately 45-60 minutes. In addition to the answers of the interview questions, additional information was also obtained and important sentences were scribbled away to quote from them during the thesis-writing process.

- **Research Questions**

Three main questions were identified during the preparation and research phase of this research.

I. How is the Turkish IT SMEs' level of project management capacity?
II. How is the Turkish IT SMEs' capability of adopting digital technologies in their project management process steps?
III. How is the Turkish IT SMEs' level of economic self-sufficiency in terms of project management?

These key questions listed above were prepared by specifically targeting different functional areas of business like management, technology, and finance to prevent this research from progressing shallowly. The underlying reason for this separation is non-negligible interaction between functions even though the primary goals are different. Just as organs that come together and form a human body, each functional areas of business has particular jobs and they work in harmony.

1. CHAPTER THE MEANING OF PROJECT MANAGEMENT FOR SMEs

In this chapter, the economic units called as small and medium-sized enterprises are defined in the literature and selected geographical regions. Their share in the market and comparative advantages are briefly explained and a general company profile sketchily created. Furthermore, project management concept is addressed and its development process is evaluated by reviewing used methodologies and styles. Besides the theoretical information, the essential elements and their potential impacts are clarified to put the appropriate methodology into practice.

1.1. Conceptualizing SMEs

Although there is not a consistent definition for SMEs due to various parameters and classification criteria determined by countries, simply put, small and medium-sized companies shortened as SMEs are the classified economic units based on revenues and number of employees. Owing to SMEs' colossal contribution to the national economies as well as the global economy, SMEs have become an important subject in the economic plans. These plans contain many details such as setting and changing standards, activities of the SMEs, financial conditions, and are followed up regularly.

According to the described standards by Description of Small and Medium-Sized Enterprises Regulation About the Qualifications and Classification (2005), SMEs are classified by the number of employees, annual net sales income and annual financial balance sheet in Turkey. Even though SMEs are gathered under a single roof, all micro-sized, small-sized, and medium-sized enterprises are separately evaluated by Small and Medium Enterprises Development Organization of Turkey under the Ministry of Industry and Trade. Based on Description of Small and Medium-Sized Enterprises Regulation About the Qualifications and Classification (2005) lawfully prepared, SMEs are classified in Turkey as the following:

I. Micro-sized enterprise: Enterprises employing less than ten employees annually and whose annual net sales revenue or financial balance sheet does not exceed three million Turkish Liras.
II. Small-sized enterprise: Enterprises employing less than fifty annual employees and whose annual net sales revenue or financial balance sheet does not exceed twenty five million Turkish Liras.

III. Medium-sized enterprise: Enterprises employing less than two hundred and fifty annual employees and whose annual net sales revenue or financial balance sheet does not exceed one hundred and twenty five million Turkish Liras.

Small and medium-sized enterprises (SMEs) play a major and leading role in Turkey's economic strength in the current economic conditions. Their main objective is being innovative, flexible, customer-oriented and often even market leaders in their industry. Also, short decision-making processes and the resulting short reaction times make them an attractive and promising company by using advantages of headcount in the firm. Besides, SMEs are generally overwhelmed in the area of longer-term and strategic action and usually work more "operationally". Significant threats to the security of the company can lurk as the business environment becomes more dynamic and complex.

SMEs' classification process is slightly different for European countries. European Union member countries, Commission Recommendation (2003) published by the European Commission reference in the definition and classification of SMEs accept as guidelines. The definition and classification determined by the European Commission according to this recommendation are as follows.

I. Micro-sized enterprise: Enterprises employing less than ten headcounts and whose turnover less than or equal to two million Euros, or balance sheet total less than or equal to two million Euros.
II. Small-sized enterprise: Enterprises employing less than fifty staff headcounts and whose turnover less than or equal to ten million Euros, or balance sheet total less than or equal to ten million Euros.
III. Medium-sized enterprise: Enterprises employing less than two hundred fifty staff headcounts and whose turnover less than or equal to fifty million Euros, or balance sheet total less than or equal to forty three million Euros.

Regardless of the area of activity and industry, SMEs have several both qualitative and quantitative common features. Thanks to these constituent characteristics, SMEs are able to develop their identity formations or reevaluate their business profiles. Quantitative characteristics are the numerical values of number of employees, turnover and balance sheet total used to define and classify SMEs. Besides, Ihlau and Duscha (2013) examined SMEs' qualitative characteristics and grouped them as business model, information, owner and financing. According to

this examination, Ihlau and Duscha (2013) deduced that *"SMEs often exhibit a low degree of diversification, both in terms of the products and services they offer and their financing structure"*. Besides this inference, they also draw attention to deficiency of separation between ownership and management which is the core object of this research. This subject is one of the core objectives of this research and both two essential characteristics are addressed in detail.

SMEs also include another essential qualitative characteristics such as low degree formalization, flat hierarchies, personal contact between employees and entrepreneurs, customer intimacy, complete or extensive independence from corporate groups, unification of entrepreneur, investor and manager in one person, innovativeness and independence from corporations. As is seen, these qualitative characteristics are hard to measure and it would be so difficult to classify SMEs by using these characteristics. Therefore, countries have defined and classified SMEs based on their quantitative characteristics.

SMEs have a great advantage in terms of time when making decisions differently from large-scaled companies through shorter information channels and can thus respond more quickly to customer needs. The hierarchies are usually flattened and the organizational structures more manageable and easier to set up than large companies. This horizontal (i.e. flattened) hierarchy encourages employee involvement through a decentralized decision-making period. A strategic business alignment can pave the way for the future and be a great help to company management. Through a strategic planning process, a company can go through the proper channels to shape the future of the firm, from the vision to the implementation of the strategy. Such a strategic process needs to survive the hardship, but it is the first and primary opportunity that a company takes on the implemented strategy. Also, more operational work is being done instead of preparing for the future and strategically leading a business.

1.2. Definition of Project Management

According to Project Management Institution (PMI), project management is defined as an application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. As a management task, project management is divided into business process units like project definition, project implementation, and project completion. The main objective is to ensure that projects are properly planned and controlled, that risks are reduced, opportunities are

advantaged and project objectives are achieved qualitatively, on time, and within budget. All these project management elements are defined in Project Management Body of Knowledge (PMBOK Guide) by PMI and expanded as initiating, planning, executing, monitoring and controlling, closing. PMI (2017) described project management as *"Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements".* Project management aimed to be gained a different point of view to these successive process units. In PMBOK 6th edition, project management concept involves various business areas and units as integration, scope, time, cost, quality, procurement, human resources, communications, risk management, stakeholder management.

According to Association for Project Management (APM), *"Project management is the application of processes, methods, skills, knowledge and experience to achieve specific project objectives according to the project acceptance criteria within agreed parameters. Project management has final deliverables that are constrained to a finite timescale and budget. A key factor that distinguishes project management from just 'management' is that it has this final deliverable and a finite timespan, unlike management which is an ongoing process. Because of this a project professional needs a wide range of skills; often technical skills, and certainly people management skills and good business awareness."* (APM Body of Knowledge 7th edition). In short, APM's approach assumes that sufficient competence of the persons involved enables them to act successfully even in dynamic environments. In contrast to the more process-oriented PMI approach, project team members are not provided with a process model that specifies what has to be done when in the project.

PRINCE2 is the abbreviation for PRojects In Controlled Environments defines project managements as *"Project management is the planning, delegating, monitoring and control of all aspects of the project, and the motivation of those involved, to achieve the project objectives within the expected performance targets for time, cost, quality, scope, benefits and risks."* PRINCE2 has created their processes to control this variables because these six variables are considered to directly affect project performance.

The main objective of project management is to achieve project goals productively and meet customer needs effectively by minimizing total project cost (Koskela and Howel, 2002). So, reducing inconsistency and increasing productivity

accompany this target to bring the project to a successful conclusion. Despite the perspectives and processes of institutes, associations, programs, and authors that worked on project management are different, efficiency is always a primary goal.

Although there is no universal project management definition, the concept of project management is defined differently according to the applied methodologies. These definitions are not industry-based, but project managers are responsible for determining appropriate project management tools based on the industry they work with and the products they develop. PMI, APM (i.e. certification body of International Project Management Association (IPMA) in the United Kingdom) and PRINCE2 have their own project management approaches and certification programs.

According to Harvard University, project management is described as planning, scheduling and orchestrating of project activities to achieve the project goals within a fixed time (Project Management Study Guide, 2019). Harvard Business Review Staff (2016) divided the project management processes into four phases to be applicable to all industries and all project sizes, namely, planning, build-up, implementation and closeout. Owing to the applicability of these four phases for all project types, essential processes have been standardized. The knowledge of the processes and possibilities of project management is indispensable, if a company wants to increase the efficiency and not only successfully complete the projects, but also profitably and in time. Keeping a broad perspective on its advantages enables us to understand that project management has a direct impact on all processes implemented in the company beyond the development or production stage.

1.3. Development of Project Management

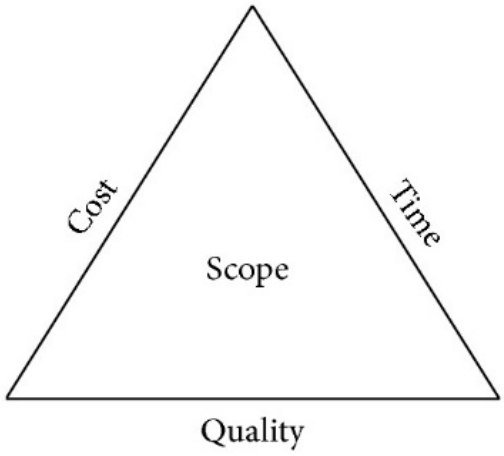
Aston (2019) evaluated the project management as a methodology to specify and apply the phases of projects based on the technical structure. These phases are associated with each other and sorted according to the priority and logic flowchart thus; a loop consists which called the life cycle. The project life cycle is accepted as a basic structure and whole processes are constructed on these stages. Although the life cycle schema is approved as a basic rule, it can be bent by the size of companies, industries and organizations, countries, size of projects, number of team members and so. The project management life cycle starts when the idea becomes expressible and can be documented. This initiation point can be assumed as a gunshot in the air before the running start and the closure of the project is determined as the endpoint.

The phases can be skipped, shorted or expanded without changing the main flow or replacing the stages. To give a clear example, some web projects require to work on the sample site for testing before moving to the live web site. This process reduces risks on the production and this kind of project includes two different testing and fixing period for staging and production. This means an extra testing period has to be added for the development in the execution phase. All these stages and breakpoints are determined by the project manager and it requires strong technical detail and the ability to make correct decisions. At this point, we can describe the project managers who blend the requests and technical information as a bridge between the clients and the working team.

The accomplishment of the project is influenced by the significant constraints that are defined in the project scope. Basically, using resources, meeting customer needs and maintaining efficiency and quality, even in case of any change, are the essential parameters that make the project success rate measurable. All these elements come together and create a visualization model, which named the iron triangle of project management as a traditional method and developed for measuring project success or failure. To keep the balance between the three components of the iron triangle that specified the time, cost and quality is an uphill struggle for the managerial staff. These three factors are called “the Iron Triangle of project management” since the variables are so strongly integrated.

Stojcetovic’s study deduced each three edge of the iron triangle and the effect of each component on the other two scopes based. They specifically explained the role of project manager during the implementation of an iron triangle methodology based on customer needs (Stojcetovic, 2014). According to this research, the balance between the edges has to always be kept, just like the sum of the inner angles of the triangle is 180 degrees. All three constraints in Figure.1 have direct or inverse proportions between each other and these variables are able to differ according to internal and external factors and desires received from the project contractor to satisfy their needs. Basically, this traditional method harmonizes the elements of the iron triangle and their mutual connections by applying a waterfall model.

Figure.1. The Iron Triangle

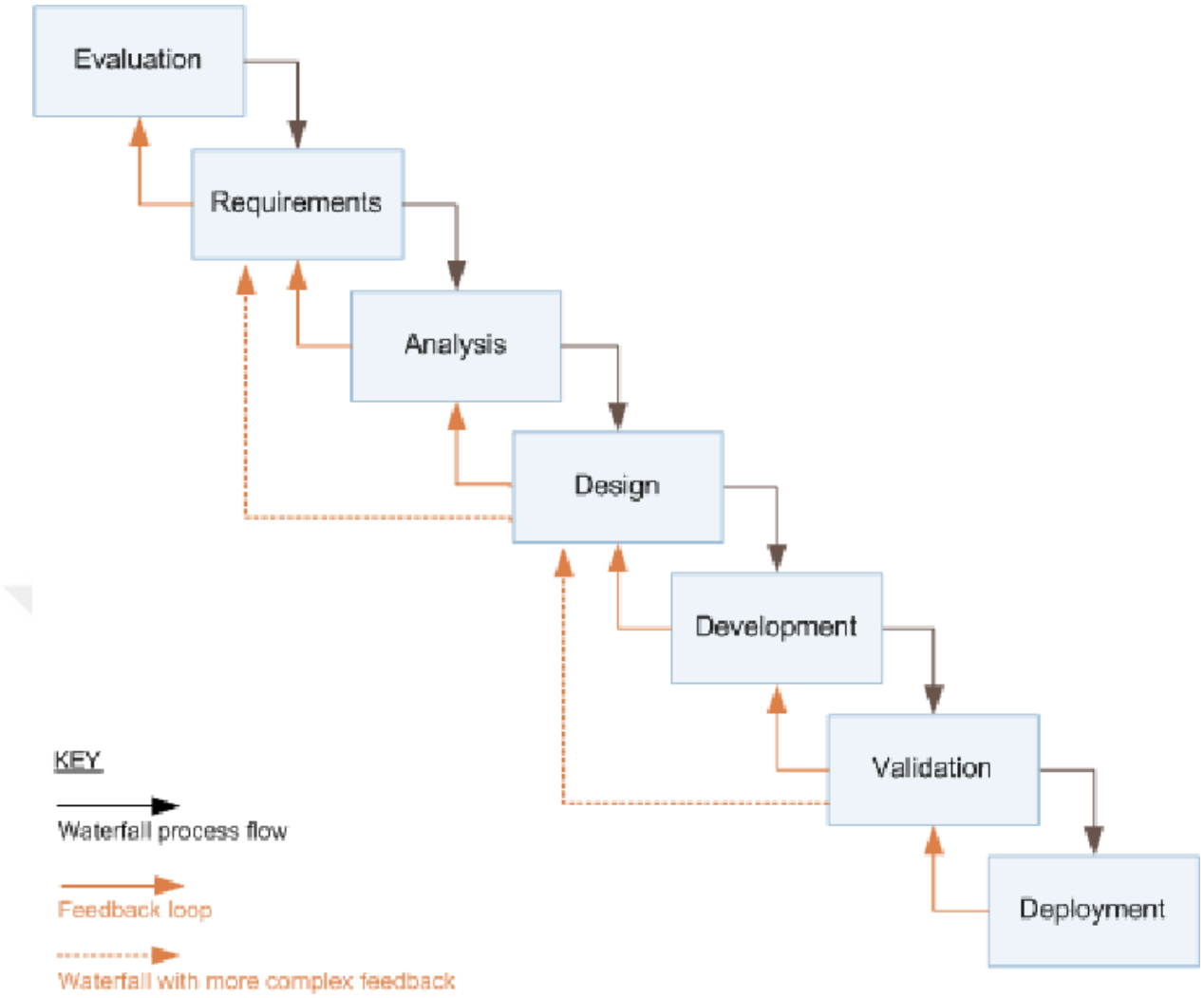


Source: Leong, T. K. et al. (2014). Using Project Management Performance to Measure Effectiveness of Quality Management System Maintenance and Practices in Construction Industry. *The Scientific World Journal 2014 (5).*

For instance, quality should reduce the time and cost consumption in the normal project flow. Quality products are not required to spend additional time to fix possible defects on the project, so, the risk of over budget is prevented by maintaining the quality. In spite of that, the project manager is responsible for fixing the issues and solving the problems faced in the testing period or received from the customer.

Despite the new methodologies has been improved by changing the iron triangle, it has been approved for 50 years. The waterfall method has been remained incapable especially to increase productivity and efficiency during the whole project life cycle. However, some project types and working principles are appropriate to apply, and companies are still insistent on using the waterfall method.

Figure.2. The flow scheme of the waterfall model



Source: Ruparelia, N. (2010). Software Development Lifecycle Models. *ACM SIGSOFT Software Engineering Notes, 35 (3),* 8-13.

The Figure.2 refers to the flow scheme of the waterfall method has a form like a ladder, and each stage of this methodology represents a stair, so moving on to the next step or getting back to the previous step are the required movements to follow the natural process. This model underappreciated the time management as can be understood from the back and forth on each stage, and every feedback loop means the waste of time due to starting working on it from scratch. Thus, productivity slowdown becomes unavoidable and the primary purpose of the project is failed. Also, these loops cause exceeding the project budget in the iron triangle because of the additional workforce cost and it has to been recalculated to follow-up resources after every modification, rework or issue (Stojcetovic, 2013).

1.4. Implementation of Project Management in SMEs

Some industries have many dynamic variables and use unstable platforms or technologies, especially the IT sector and the software services industry is based upon the technological platforms, and, technology is the totally unstable slope of itself. The probable risk factors are the foremost and demanding subjects due to unexpected problems such as the 3rd party software issues and bugs, an interruption between environments and servers and so forth. All these factors should be considered at the beginning of the project and closely monitored under the head of risk management until the project is successfully closed.

Nowadays, the most challenging issue for companies is to have foresight into this crux and intervene at the right time. In order to find the right time, a team member who has comprehensive knowledge of project status and control over the process management is needed. Although how difficult to accept the necessity of this essential team member, a close follow-up lies behind all successful companies and accomplished projects. A part of SMEs try to lay a burden on company owners in person however, they don't show to regard their workload density and unproductiveness of micromanagement. Beyond the firm owner, micromanagement has a direct and considerable impact on the psychology of employees due to contextual relationships.

As mentioned in the previous chapters, SMEs have both quantitative and qualitative characteristics. In Turkey, these quantitative data used to determine the business class is gathered in the Declaration of Information About the Quality of Small and Medium-Sized Enterprises from the enterprises during the legal application process. Whereas qualitative characteristics are the fundamental elements that shape the SMEs' company profile and unwritten suggestions for entrepreneurs. Under the title of "Implementation of Project Management in SMEs", the major qualitative features and their advantages or disadvantages are briefly analyzed.

1.4.1. Flat Hierarchy

Flat hierarchy is one of the qualitative characteristics of SMEs and internal hierarchical structuring. Due to the number of employees and role distribution, it has an important place that can directly affect the success rates of SMEs. Project management process with flat hierarchy meets the interdisciplinary team needs and get productive results. In addition to that, short communication channels meet these tasks much better than traditional organizational structures. Flat organizational

structures have few or no levels of management between managers and staff. By this means, an informal and open work environment is created and this effective communication generates motivation and strengthen the communication among team members. Alvesson (1989) demonstrated that the implementation of the flat structure shows an attempt to achieve cohesion among the employees, to create a feeling of belonging and a "we-sense". Alvesson (1989) described that flat hierarchy symbolized proximity, informality, and free communication.

Galectic (2005) demonstrated that SMEs have a flat organizational structure and an organic, free-flow management style that encourages entrepreneurship and innovation. William Craig expressed that the horizontal structure increases the coordination among the employees and helps efficient communication through decentralized decision making processes. This expanded team based management arises from horizontal organization structure, and it could vary depending on company culture and aims (Craig, 2018). Alvesson deduced that the idea of flat structure, non-hierarchical organization, based on the collective consciousness, is dependent on continuous social action that should harmonize with this viewpoint (Alvesson, 1989). Based on this deduction, organizational structures are the processes that should be followed after implementation and should not be removed from the concept.

The most significant role in all these filters applied in the decision making process is among the most authorized people in the company. Although, generally called these people bosses or company owners, the indispensable feature of being a rainmaker is being a leader. That's why we are able to see leadership qualification as the most wanted job requirement on executive position job postings.

Just like in all team games, in business life, the company and the team need executives who can direct and coach them. The close and healthy communication between the team members and their coach underlies the successful games and a streak of wins. Each player has a different position on the field and the coach use the most appropriate formation to define the game strategy. This structure, where layers are reduced as much as possible and the players are directly up to the coach, is one of the most prominent areas where the horizontal organizational structure is applied except the business world. We may assume football teams as small enterprises due to fulfilling the condition of fewer than 10 employees. Hence, the adaptable systems

that gives team strength may be accepted as flattened hierarchy based on the team based management.

In the context of flat hierarchies, employees in the company are usually given greater scope for action by being able to take on more responsibility and initiative. However, flexibility and more independence go hand in hand with more responsibility and self-organization. After all, a flat hierarchy can also be seen in other characteristics. Often there is a friendly atmosphere, for example, having a nice time and also the office design is different. In companies that rely on flexible working methods, for example in the very fast-moving digital industry, value is often placed on open spaces with mobile structure elements that accommodate quickly assembled project groups. So, we may make inferences that flat hierarchies are counterproductive when the team's success is at risk or when the team's results are unfairly distributed.

One of the main objectives of the horizontal organization hierarchy is that it is planned to enhance productivity and efficiency directly. Most especially, when the communication and approval process between layers is taken into consideration, the middle management level is eliminated or at least greatly reduced due to provide a healthy and direct communication channel. Regardless of the sector, time is a crowning touch in business life, and unlike other elements, there are no correction or reformation methods when any negative results are encountered regarding time management. As a boss, conversations that always take place at eye level, a relaxed atmosphere so, flat hierarchies automatically ensure that the climate in the workplace is extremely relaxed and pleasant. This in turn increases employee satisfaction and ensures that they enjoy coming to work.

1.4.2. Tall Hierarchy

Tall hierarchy is an organizational structure model that is developed in contrast to flat hierarchy and it is suitable for corporate companies rather than SMEs. Due to tall hierarchy affects project management processes closely in terms of time and communication with its multi-layered structuring, an organizational structure that SMEs trying to implement agile project management processes should be avoided. Dufour and Son (2011) compared small and medium-sized organizations and large organizations in his research, and demonstrated that SMEs adopt flat structure with few layers of management, flexible structure, and information flow and normally rapid response to environmental changes. On the other hand, this

research revealed that large organizational adopt hierarchical with several layers of management, rigid structure and information flows, and normally slow response to environmental changes (Dufour and Son, 2011).

In companies with a tall hierarchical structure (i.e. steep hierarchy), the authority to issue directives is very clear from top to bottom. Everyone has a direct supervisor who gives them work instructions and makes decisions. The communication from top to bottom or from bottom to the top always runs through the higher or lower rank so, there is no direct contact between the lower and upper positions in the structure. Clarity Consultants (2016) describes the tall hierarchy as more traditional organizational structure and adopted by large companies and white shoe firms, and, characterized by a pyramid-like model that integrates levels of management spanning from low to high. C-levels position at the top of the pyramid, and with each manager directly responsible for, and delegating tasks to lower-ranking employees. Low-level managers are generally responsible for daily progress and updates. And, high-level managers handle more high-profile decisions and long-term strategies to improve productivity.

1.4.3. Flat Hierarchy as a Qualitative Characteristic of SMEs

Seamlessly adopted a functional organizational structure refer to SME is set up. These organizational structures are usually visualized with diagram and charts. As for the project management approach, the implemented organization structure directly affects resource allocation and influence the staff's role during the project development process.

Can we say which organizational structure needs to be adopted directly depends on the company size? We can deduce that particularly, in large, complex companies, multiple hierarchy levels are necessary and flat hierarchies are only suitable for small companies such as start-ups. So, SMEs also fall into the category of companies where the flat organization structure is appropriate to internally determine the decision making process. The flat hierarchy for SMEs is the most effective method that minimizes the potential risk of loss of time and accelerates the taking action.

The difference between SMEs and large scaled companies and handle the subject with the broad scanning approach of business structure. According to their research, generally, SMEs focus on strengthen their market presence by using advantage of conceptualized business entity. Also, they evaluate the organizational

structure of enterprises mathematically and conclude by way of a rational analysis (Antony, 2016). As a result, SMEs might adopt a flat hierarchy and an integrated set of business functions but large-scaled companies adopt a matrix organization a set of business units. Matrices express linear dependencies on several variables and can be interpreted as linear mappings (i.e. example describing reflections, projections and rotations), and more complex versions of basic functions due to number of variations. So, the word matrix also has several meanings outside of IT, and power of math shows itself in every business and science area without making discrimination.

Besides, the study defends the opinion that horizontal hierarchy is a part and parcel of creating the most appropriate business development pattern under suitable conditions according to the characteristic features of the companies (Antony, 2016). They identified the areas where SMEs should be specified separately in this process and evaluate their perspectives from which they could gain an advantage. The subjects are addressed and listed as below:

- Low start-up costs
- Portability
- Leadership
- Management structure
- Planning
- Systems and procedures
- Human resources
- Market and customer focus
- Operational improvement
- Innovation
- Networking
- Revenue and profitability
- Ownership and taxes
- Locations

Beyond the employees and team members, many variables need to be included in the equation when choosing the right hierarchy. At this point, the entrepreneurs have to work more than anyone else in the company and should adopt the firm as their child. Barely, such diligence ensures that major decisions are made correctly.

1.4.4. Innovativeness and Need of Renovation

Innovativeness is one of the vital characteristics of SMEs and a key aspect of business longevity due to innovation ensure the SMEs use their resources and experiences more effectively and produce new solutions by using high technology (Acs and Audretsch, 1988). Innovativeness is an essential factor that stands out especially in the process of producing effective solutions for long term targets or market needs. Gaining a forward-looking perspective and vision by blending the analysis of the experiences gained and current technologies affects the success rates of the SMEs. In order for the innovative ideas to be implemented properly, process follow-up and documentation within the company should be done completely and the margin of error in the analysis process should be reduced.

Internal data and capacity analysis are needed to properly plan innovation and repair processes. The efficient method for this purpose is to adopt a standard of documentation and a specific execution schedule. The execution schedule templates which have already been created according to the project type, make this monitoring quite easy. These execution schedules also life-saving in customer updates beyond being used internally so, nowadays Excel files and Google Spreadsheet templates are widely used. Although any project management software is the best method for keeping all internal documents organized, it might not be shared with other people for security reasons. Because almost all of these software has export/import feature, making it a shareable file is a very easy process and definitely a security-wise solution. As a result of prepared execution schedules and reports, the areas that require improvement can be determined specifically and productivity can increase. Taking precautions to use new technologies according to the field, developing new solutions or not to encounter a problem again are the most confident steps to be taken for this purpose.

1.4.5. Personal Contact Between Employee and Entrepreneurs, and Micromanagement

Personal contact between employee and entrepreneurs is another important qualitative characteristics that SMEs need to have. The low number of employees causes the boss-employee communication to be more frequent. Although this is a factor that makes things easier, excessive controlling behavior has a negative effect contrary to expectations.

"Micromanager" is often used as a derogatory term. In the business world, a micromanager can be considered judgmental, controlling or even dictatorial. In these cases, micro-managers either have very little subordinate work or are too critical of every detail of a project. Workers in this situation can begin to feel angry and even lose motivation. Ramsey describes toxic leaders as notorious for meddling and micromanaging and express that toxic leaders have a fear of staying out of the loop and losing the control on their employees (Ramsey, 2007).

An undeniable fact that motivation is the key to acquisition both in business life and in other areas of life. Therefore, considering employee psychology and choosing motivation increasing methods instead of focusing on their work's reflection on the manager or owner is a productivity-enhancing perspective in SMEs. The micromanagement of executives, that is the excessive control and interference in the tasks of the employees, leads to low motivation and dissatisfaction. Eventually, the fatal impact is a foregone conclusion for the employee, the boss, and the company. With micromanagement, the team is educated to immaturity. In the worst case, in the end, only all the service is required, and the boss sinks more and more in daily business. Running into risk and having a professional manner is a leadership qualification rather than a regular being a boss.

Often executives don't even realize they are applying micromanagement as a management style in their companies. Perfectionism, drive a wedge between employees and boss, being under extreme stress and putting employees under stress are the major red flags. These psychological symptoms that occur in managers directly affect the success of the company and the performance of the ongoing projects. No matter how highly qualified employees are, it should always be taken into consideration that SMEs that have been inactivity for a while are not suitable for micromanagement.

Executives are basically responsible for the success or failure of the entire company and sub-branches of the organization to continue its operation, and these are quite weighty responsibilities. Besides of these organizational processes, following up the up-to-date project status requires ownership, ultimate attention, and dedication by individuals responsible. Hereby, a manager need arises and often become a part of the team with the project manager title. However, it is quite difficult to define strict roles and a solid organizational chart in SMEs. At this point, there are

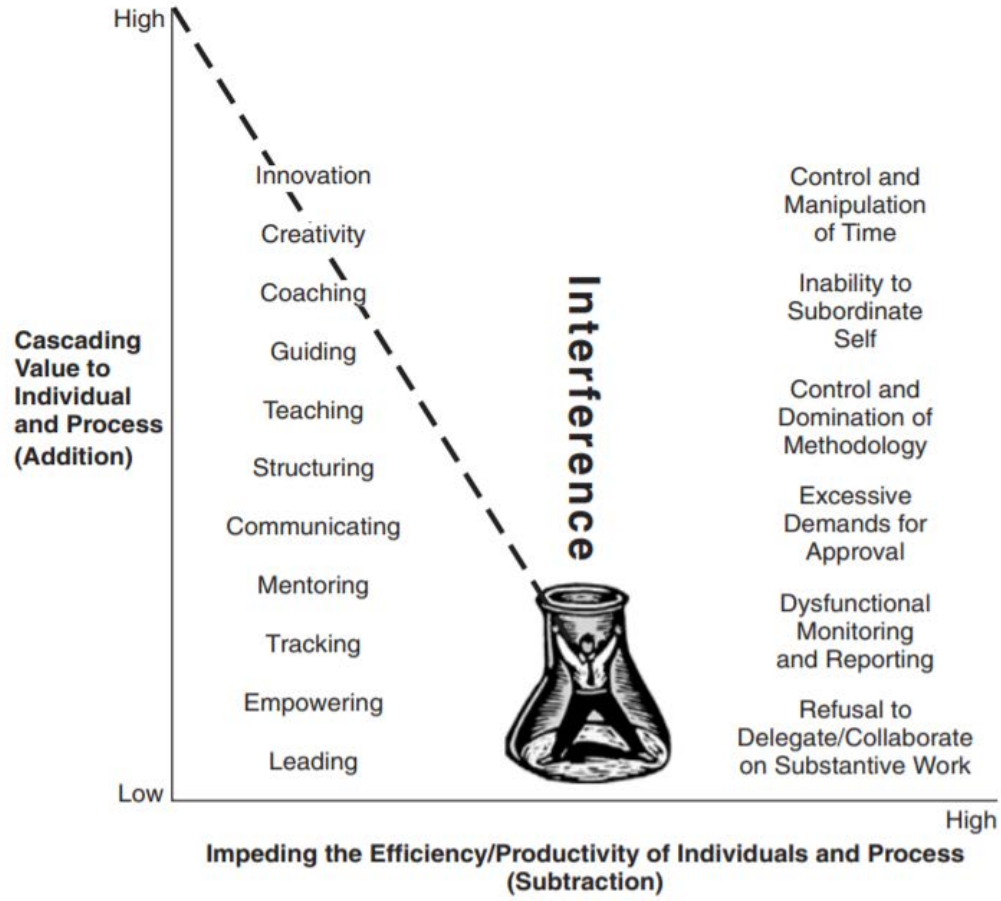
two main subjects to focus on: delegation of the right jobs to the right people and decentralization of management and boosting employee productivity.

In particular, management positions are filled by technical stuff besides company owners. Even if we assume it as an efficient method, perpetual position change causes confusion in prioritizing tasks and a lack of feeling of ownership. This chaos environment affects the work motivation and performance efficiency of team members due to step out the line of the specified job description and employee profile. The project management body of knowledge also includes its own methods and schedules just as accounting, marketing, and programming. Assigning this management responsibility to any team member who has expertise in another area can lead to poor results. Maw (2015) discussed that micromanagement has a huge effect on performance and productivity and he believes that micromanagement betrays the trust between employee and entrepreneur.

However, micromanagement can also be a useful tool to start a new business and train new employees. When a business is first initiated, it is the manager's responsibility to set procedures and protocols for everything from location and office supplies to hiring and project burdens. In such cases, the micromanager is probably the business owner.

Another exception is times of uncertainty. If a business is going through a bad time or a period of uncertainty, it may be important to have micromanagement within the team to make sure everyone knows that improving the organization's stability is paramount. Failure to keep everyone on track can not only lead to further financial losses for the company but can also lead to panic and flight from the company, which can aggravate the situation for those who remain in the company.

Figure.3. The micromanagement cascade



Source: Chambers, H. E. (2004). *My Way or the Highway: The Micromanagement Survival Guide.*Berrett-Koehler Publishers.

Figure.3 shows the transition from adding individual values to intervening in the individual process. Positive contributions and constructive feedbacks that needed to leave gaps for the movement area and major problems that they will transform within the crossing of borders are shown (Chambers, 2004).

1.5. Project Management Software for SMEs

A successful and organized project management process definitely increases the success rate of projects. The impact of a successful and failed project has an equally large, if not more significant, impact on an SME. However, SMEs often underestimate systematic project management and do not consistently apply project management. SMEs get the upper hand due to project management generates knowledge. Then, it brings together the skills of the individual so that they can flow into the project. The truth is that without a good project management process, even the ongoing successful projects are in danger. Naturally, exceptional situations,

additional sources or overtime are the variables, which always need to be tracked closely. To prevent this possible loss-making, a leeway is determined in planning duration and it is called as buffer. This buffer time differs for each project, so we cannot speak of an exact number or rate. But, it is mostly calculated as a value between 20% and 30% over the total duration of the project. The buffer is strictly determined at the planning stage of the project and is added over the hour which agreed internally. So, the contract is signed over this total hour that calculated with buffer.

Accomplished project management involves much more than just controlling the iron framework of project management and adhering to time, budget and scope. It unites customers and teams, creates a vision for success and brings everyone up to date on what is necessary to stay on the road to success. If projects are managed correctly, this has a positive effect, which goes beyond the completion of tasks.

Project management software is a class of computer software applications that is developed to serve many purposes and generally has a wide functional infrastructure, and it is within the scope of Information and Communications Technology (ICT). The use of ICT in modern organizations and operations significantly affects both companies producing solutions and users using those solutions (Datelij, 2007). Procedures, in which technological solutions are insufficient and generally had to be done manually, have started to be completed in a much shorter period of time with the developments in ICT field and common usage especially in operative project management processes (Datelij, 2007). Owing to a significant reduction in time consumption on the assignments, employees have been able to complete the same tasks by making the slightest effort.

Kundu and Bishoi (2015) categorized project management software as desktop applications, web-based applications, personal applications, collaborative applications, non-specialized tools. Personal applications, collaborative applications and non-specialized tools also have characteristic of web-based applications. Due to their place of use, they have been separately categorized (Kundu and Bishoi, 2015).

Web-based project management software has an essential feature, namely, accessibility. Tablets, smart phones, laptops and desktops are the technological devices that all project team members and stakeholders use. Thus, users may want to follow up on the processes through technological devices they would like to use and the most suitable software for this structure is a web-based application.

Moreover, Kundu and Bishoi (2015) defined the purpose of project management software as scheduling, dealing with project related information, gain visibility and insight, communicate and collaborate productivity and quality. Modern project management practice requires answering all these specified objectives and digitalizing the processes. Thanks to these practical purposes, a great number of project management software has been developing and the risk of distortion of competition has been reducing.

In the IT companies, the most preferable project methodologies are Scrum and Kanban however, there are simply no flexible models or methods that address individual needs. So, they lead to inefficiencies, especially in the software projects which have multi-tiered phases. The standardized and the most popular products of the large providers such as Jira, Confluence, Stackfield, Asana, Trello, etc. often support only one method of project management. For this reason, using these tools blindly may result in loss of efficiency. Execution schedules, project sprints and stages needed to be customized based on the deliverables for each type of project by project manager. These customizations may be removing/adding tasks, platform changing or selected various 3rd party applications.

Anatatmula (2008) defined the importance of technology in the project manager performance and deduced that technology helps the project manager develop and formalize project processes and initiate open communication. Thanks to technological tools, the project team can access the older data and desired information, and keep them organized. So, accessibility directly bring with better collaboration, trust-building and decision-making process. As highlighted by Anatatmula (2008), the most efficient and effective benefits of using technology in project management are listed as below:

- Documentation of project roles and processes
- Establish formal and consistent processes
- Communicate expectations of processes and roles
- Communicate transparently between all physical and virtual team members
- Monitor and manage project outcomes

Based on all these advantages of including technological tools into project management, long-term benefit are brought as well as short-term benefits during the whole project.

Almost all these project management tools are paid so, companies need to choose the tools that really meet their needs and don't exceed the allocated budget to avoid unnecessary expenses. This point is somewhat more difficult to choose which tool meets the needs. Because what makes a good project management tool usually depends on the people who use it. That means, as with any other piece of software, the result is the requirement definition. In concrete terms, this means that a tool should always fit the companies' requirements. In the competitive software market for project management tools, free products might be the right alternative, if the team has less than five people and small budget. In addition to them, free options of commercial project management tools might be also a budget-friendly alternative instead of free products. On the other hand, with a high level of project complexity and an increasing number of participants, project management tool requirements are totally changed. Since the projects are often very complex, they have to be managed professionally. Besides planning, controlling, following up and managing resources during the whole project cycle, these tools matter to stay organized by considering cases of emergency.

Chauma (2017) also highlights the strategic importance of using project management tools and implementing the most suitable techniques into the processes. Basically, the role of project management interfaces between projects, prioritization of resources and keeping the balance are emphasized. In another research on the same business approach, identifying the choosing appropriate project management tools and techniques in SMEs as a conclusion of appropriate strategic objectives, KPIs, success factors and criteria. Once all these requirements are clearly defined, companies determine their main focal spots and they set new goals with the help of broad scanning. (Murphy, 2007). The most important feature that distinguishes project managers and other management staff from technical employees is their ability to evaluate from a different viewpoint. Besides developing software and technical details, financial stability, profitability analysis, and business quality are incumbent on project managers. All these responsibilities and the necessity of someone who needs to keep an eye on the project status closely, once again explain the role of project managers in this process.

SMEs mostly tend to control project management processes by the highest authorized people in the company. According to Turner (2010), SMEs don't prefer working with professional and qualified project managers, and they are not familiar

with digital project management tools or applications due to argue shoestring budget. Once the owning cost is considered, to hire a person who specifically manages the projects and start using paid tools for both internal and external communication systematically looks like a drain on the sources at first sight. However, these expenses may be accepted as investment and companies may set sight on long term outcome. At this point, SWOT analysis might be a good alternative to define strengths, weaknesses, opportunities and threats of the companies. According to the result of SWOT analysis, they are able to select the most appropriate strategy for their project management process. Moving away from salvaging the day approach brings along innovation and efficiency. To create this awareness, project scope and deliverables should be clearly determined, and both the company and customers should agree on expectations and responsibilities.

Also, the number of companies that implement project management include the process is higher than their predictions before starting the research. Even in 2010, the awareness of project management was surprised the researchers (Turner, 2010). In the last decade, especially in the software and IT industry, the speed of self-development was quite high and they are keep going to improve themselves day by day. Although it seems like champions league of technology, this progress directly affects SMEs and start-ups as well.

1.6. The Role of Project Management Software in Communication and Collaboration

Rajkumar (2010) expressed that an effective communication is obviously a crucial process for accomplished project management. However, internal and external problems that are encountered during the project may make things difficult and directly affect the project flow (Rajkumar, 2010). The communication term has been derived from Latin verb **“communicare”** and means "to communicate, to do together, to unite, to share, to participate" (Cleary, 2004). In this context, we can say that communication is a kind of information exchange or sharing. Again, according to Rajkumar’s research, 90% of project management processes constitute communication (Rajkumar, 2010). So, effective and goal-oriented communication has an important role in prioritizing the project manager’s responsibilities.

Despite intragroup and client communication feature in all industries, and communication becomes more of an issue in the IT sector too due to technical end systems and platforms (Guglielmo, 2004). Therefore, if clients confronted any

problems or have to endure frequent downtimes, a project can be considered a failure. Uninterrupted communication about upcoming or onboarding IT projects requires other factors besides special IT skills. Even if all stakeholders have been involved in project planning, there can still be resistance to any changes within the organization (Guglielmo, 2004). Many IT projects are quite technical, not transparent to clients, and can pose immense problems to clients if they are not given clear instructions. The best way to manage requests or changes is through target group-oriented communication, timely provision of information and a well-prepared project management software that can provide the necessary communication. There are innumerous project management software and applications in the market that can be used for internal and external communication in the companies during the project life cycle. Luckily, IT companies have already realized importance of using project management tools and software because of their products are already programs and consequently project management software usage awareness is higher in IT compared to other sectors. Mostly, the companies prefer using separate platforms for both team collaboration and client communication.

Ritchie explains the importance of having an effective internal communications and expresses that effective internal communication leads up to working collaboratively towards a common purpose (Ritchie, 2015). Being in uninterrupted communication with the team ensures information exchange and file transactions from anywhere and anytime. To set a common goal among the employees for each project or team, and being on the same page makes the plan for ongoing process management easier. This kind of internal communication software and project management software serve at cross purposes depends on satisfying the particular needs. For team collaboration, social networking based applications are mostly preferred by companies. Due to these applications provide faster communication and better teamwork, generally ideal for SMEs. Besides efficiency, almost all of these pieces of team collaboration software are paid applications. Or they charge a fee per user based on the offered payment plans once the user limit is exceeded. The internal communication applications have a large share in the turnover in the software market and they provide instant messaging and chat services. So, we can assume them as WhatsApp in the business world.

Most companies realized that email is not the ideal means of communication to meet their needs in more recent times. Even so, email is still the most common

way of communication in professional business life and it comprise the entire communication chain of business correspondence and quick coordination between colleagues. But it lacks efficiency, immediacy and real-time because the email still has the feature of correspondence. After all, it replaced the exchange of letters or faxes sometime in the distant past. Wells listed the ineffective ways of email communication as email overload, wasted time, not made for collaboration, not made for real-time conversations, deskless workers don't use email, not mobile-first, no accountability and ineffective content repository (Wells, 2018).

As a result of the advancement of technology, chat tools have been developed by many software companies then, they have proven themselves to speed up internal communication in a short while. Instant chat tools are informal platforms and do not have strict rules such as greeting, title, signature and indentation format, unlike emails. Thus, short demands from the colleagues can be simulated or replaced for far too brief a time. In particular, SMEs who are dissatisfied with the internal workflow can quickly get to their feet with the free or paid tool options. Besides chat, video call, voice call and screen sharing features ensure that users can see each other or share the content of their screen if necessary. However, today's changing conditions oblige the companies to bring a different approach to provide a collaboration among employees. Working in the companies that operate at different international locations or with freelancers and the self-employed in changing teams are the most common situations which require being in effective communication. Not only SMEs, but also large and corporate companies has started to tend remote working.

According to research of Owl Labs, small companies prefer twice as likely to hire full time remote workers (Simovic, 2019). The underlying reason for tending to work with remote workers is reducing the cost and expenses in the firm. Company needs, bills, equipment requirements and necessary technological devices are financially imposed to budget in business. Especially in the sales department, the rate of hiring remote employee has been calculated as 66%. Each remote working company has determined their remote working style according to their workloads and business perspective. Nowadays, the most common developed remote working methods are basically listed as 100% working remotely, once in a week working remotely and one week per month working remotely. Again the same research reveals that 34% of them work a day or more per week and 16% just once a month. Although there is not a significant difference in the rates between men and women

who prefer to work remotely, this working style may be a priceless alternative, especially for working mothers within years.

SMEs and large corporations have tended to use digital technologies to modernize their business and communication processes. The most frequently encountered problem which is experimented by remote employees is getting stuck in a lack of communication. With the help of the rapidly increasing serviceableness of instant messaging and chatting tools, this potential risk has been minimizing day by day. Another advantage of these chat tools is that most commonly preferred ones which have several technical specifications are suitable for integration with many other platforms or tools used in business.

To give an example, Slack is an instant messenger, which is primarily used for communication within workgroups. It has been released in 2013 and become the most popular workplace communication tool in a short while. Many add-ins and integration feature that make it perfect for work, such as the automatic archiving of all interactions, a good search function, the integration with commonly used 3rd party tools and the ability to work with almost any device are provided great convenience to users. By integrating several services such as Google Drive or Dropbox with the messenger service, the shared editing of documents is possible on the cloud environment. Setting key performance indicators (KPIs) in the company, schedule calls and meetings, sharing links and files from the cloud or local storage are the primary features offered by the tool. And even servers can be linked and error reports can be automatized to get instant notifications on the created channels. So, all these features are particularly attractive for large companies, but also for small work groups as well. Slack, the extremely customizable and the widely acclaimed tool has been stood out among its rivals since it's released.

The company reveals the numbers to show that it has daily 12m+ active users and 100k+ paid accounts. Slack CEO Stewart Butterfield told that they compete with tech giants such as Microsoft, IBM and Google (Sundaram, 2019). According to statistical research of Smith (2019), percentage of the Fortune 100 companies that pay for Slack was 43%. In 2019, only after a year, Slack has announced 65 of Fortune 100 companies are using this application which corresponds to 65%. That is to say, Slack increased its popularity in the top 100 companies in the United States by 12% and it has become the choice of not only SMEs but also billion-dollar companies.

Good teams can achieve great things. In almost all companies, a lot of emphasis is placed on terms such as teamwork and teammate. Usually, working as a team in many companies is unfortunately not much more than the grouping that gathered a certain number of randomly thrown people together. Although the group perspective does not promise %100, it feeds the instinct of ownership and belonging to something inherent in human nature. A team differs from a group and the type of composition mainly because of the common goal and the sense of obligation. This also affects the objectives and designs of companies' team development measures.

Mostly, making collaboration on the projects more productive is not evaluated on an individual basis. This solution is combined with improving general workflow, optimizing communication process and facilitating involvement of external partners. In the collaboration stage, it is essential to make employees feel like a team, not a group. Team collaboration helps the employees to get used to being a part of a team by preventing individuality. Workplace collaboration tools mobilize workers for moving forward and flexibility. Using instant messaging tools and video conferencing platforms, employees can dramatically reduce the amount of time they would spend on obscurity that encountered in each phase of the project. Collaboration tools also promote open communication within a team, which can help prevent misunderstandings.

Focusing only on project management applications that developed for a perfect project and process management generally remains incapable. There are essential key points that needed to be managed by detailed-oriented project managers as collaboration, oversight, integration, and planning. In another saying, we may describe the purpose of these instant message tools as managing the way to successful project management to adapt to the dynamic structure of the project and fulfill all communication requirements.

McKinsey Global Institute (MGI) has done a detailed research on productivity through social technologies and run a conspicuous report. Researchers found that two times the more potential value lies in digital tools to enhance workplace communications, knowledge sharing, and collaboration among SMEs. (Chui, 2012). Also, MGI expects that to increase productivity from workers to managers by between 20% and 25% by including digital tools into the process properly. Also, according to their research, almost 28% of working time has been spent on checking emails regularly and 20% of working time has been expended to

gather information and reach out to the correct information source among co-workers. So, miscommunication may cause superfluously time-consumption and drain the working time mercilessly.

2. CHAPTER IT PROJECT MANAGEMENT APPLICATION

The term *technology* and *project management* are usually used together in the same sentences, especially for IT projects. Software and tools, which are the most important part of the digitization process, are immediately included in the IT industry as both products and tools. At this point, project managers' role and skills step in and they put theory into practice. In this chapter, the place of technology in project management, and the project manager's role, responsibilities and skills in the project management processes are clarified.

2.1. Relationship Between IT and Project Management

IT and project management concepts are indispensable in the development of SMEs. IT companies release software products, unlike other tangible and constant products. Software products do not only consist of a bunch of code. Content, design, UI, elements, functionalities, 3rd party applications and more need to be coordinated for an accomplishment during the project development process. Hence, the concept of IT project manager emerged and various methods have been developed for an efficient management. So, nowadays the demands on project managers of IT projects are quite high.

Hardly any other area in the business world is so often at risk of fatal misjudgments as IT project management. This applies in particular to the implementation of larger IT projects in administrations and companies. Because especially when implementing software projects, over budgets and underestimated expenses can be major defects. To avoid these mistakes, decision-makers should consider some aspects.

Anantatmula (2008) used the term *knowledge management* in his research, and defined knowledge management as a bridge between IT and business. According to his research, technology combines knowledge management and IT, and helps to enhance project management performance. Due to enhance organizational performance and competitive advantage, several organizations and enterprises attach importance to investing in technology (Anantatmula, 2008).

CEM Solutions described that IT projects have become popular between the 1980s and mid 1990s due to uprising of information technologies and information systems working area in the 3rd era 1980-1994 (Project Management History – A Story of Evolution). Project-based work has long been established in the field of

information technology. Therefore, the IT industry is even a pioneer in agile project management methods.

The multitasking computers were able to users controlling and following up on the projects systematically. The innovation speed of both software and development in this period leads to major improvements in project management researches and methodologies. The successful results of the development of the existing project management techniques in line with the needs and the application of the appropriate system are the developments that left their mark on this age.

Taking into consideration the environmental factors, clearly determining the project scope, risk and communication management are the subjects that have been improved thanks to user-friendly and professional tools. All these improvements have been moved forward with the 4th era after 1995. Spreading project management methodologies were adopted more due to revolution in information technology between 1995 and 2000. The use of the internet leads to various changes in business procedures and life cycles to handle different aspects of project in a more well organized and productive way.

IT projects have a dynamic structure and flexibility features if need be. Although the requirement is clearly defined at the beginning of the projects (i.e. in the contracting process), the draft has been approximately created. But change requests have to always been taken into consideration.

In particular, IT projects have characteristic features just like people due to created based on the client's supply and demand. So ever, the functionalities are basically the same, different integrations and line of businesses make these projects unique. So, not all projects are the same and the advantages of individually configurable software are therefore very apparent due to the benefits of technology. These tools, which make systematic follow-up extremely easy, have become anywise indispensable for the companies which manage several projects simultaneously.

2.2. The Role and Responsibilities of an IT Project Manager

As highlighted by Ika and Saint – Marcary (2012), a project manager's major responsibilities are described as fully and goal-oriented planning and focusing on "getting things done". Cusumano (2008) referred that project managers are in charge of team synchronization, and phase separation which is determined as design, build and test cycles for software development. Cleland (1995) described the challenges project managers have as proving leadership without documented, formal authority

and being part of matrix organizations that have a problem of unity of command principle.

In some cases, the IT project manager may also be responsible for an IT department and be responsible for the smooth running and good cooperation of the department as well as the hardware and software. Especially, recent years have brought a few new project management methodologies such as SCRUM, XP, and others, which are developed based on Agile principles (Muller and Turner, 1995).

To exemplify, PRINCE2, PMI, HERMES, Scrum and IPMA which are widely used. All these software development principles might be extended with the help of different process sets and structuring various development steps. (Kneuper, 2018). In addition to that, process reference models such as agile, process assessment, method-driven are shaped according to the implemented software development model.

An IT project manager takes on diverse tasks that are determined according to the primary goals of the SMEs. The sphere of activity usually includes a particular area of IT, for which the employee assumes full responsibility. The IT project managers might be described as problem solvers in all project life cycle, and these corresponding projects can be both internal innovations and customer projects.

If needed, they act as a software developer and solve technical problems, or they follow up on the process as managers as well. The successful implementation of the IT project management is particularly important for the success of companies today. The quality of the processing of IT projects usually has a direct impact on the support of the whole company's business processes.

2.3. Skills of a Successful IT Project Manager

To fulfil the work responsibilities, a successful project manager should have strong organizational and process creation ability (Cusumano, 2008). Sunindijo (2015) expressed the identification of four skills of successful project managers, namely, conceptual, human, political and technical skills. In the IT industry, many responsibilities such as deadlines, estimated time of arrivals, presentations, guide the clients, communication with support teams of platforms or apps involved in the project development process diversify these capabilities by dividing them into sub-branches.

Shiv and Doraiswamy (2012) questioned that all taken responsibilities require technical information or not in the SMEs. As touched on the subject by Shiv and

Doraiswamy (2012), one group suggest that project managers has to have knowledge of technical details to have sense of control and even maintain their prestige.

On the other hand, other group suggests that project managers are only responsible for the project delivery, managing scope, cost and quality, and reporting, progress, issues, risks and activity status of the project.

There are also technical project managers in the sector who are in charge of handle the project in a particular technology that they have already become specialized in that area (Shiv and Doraisway, 2012). Shiv and Doraiswamy (2012) expressed the opinion that if a successful project manager has great scheduling, assertiveness, communication, documentation, and team management skills, that project manager might improve or learn technical and domain skills as well.

Udo and Koppensteiner (2009) defined a competent project manager's skills as shown in Table.1. These competencies were grouped by different organizational cultures and emphasis, and the combination of skills in the three areas directly affects the success of the project manager.

As can be seen in Table.2, knowledge, proven experience and personality are the core three competency areas and thanks to this classification project manager can create the most suitable combinations for job proficiency. And they can even work to identify missing areas and cover it up.

Table.2. Main three competency areas based on different organizational cultures and emphasis

CORE COMPETENCY AREAS		
KNOWLEDGE		
General Management Skills o Leadership • Provide direction • Provide vision • Coach/mentor team members • Sound judgement • Issue & conflict resolution • Effective decision making o Negotiation o Communication o Team building	**Project Management skills** o Fundamental project management skills o Project management tools & techniques o Organizational savvy	**Industry skills** o Breadth (not depth) in specific application/industry knowledge o Life cycle management
PROVEN EXPERIENCE		

<table>
<tr><td colspan="2">

Strategic in approach: understands and addresses inter-dependencies and real issues
Clear definition of requirements (tested by real customer requirements) and timetables
Experience managing to deliverables and milestones: on time/within budget/meeting business needs
Ability to manage troubled teams/projects and bring them to success
Proven experience with projects of similar size and scope
Organized and efficient in work processes

</td></tr>
<tr><td colspan="2">PERSONALITY</td></tr>
<tr><td>Characteristics
Aptitude; flexibility and ability to adopt to change and cultural realities
Confidence and commitment
Pro-active, con-do attitude
Open mindedness
Common sense
Trustworthy
Creative</td><td>People management skills
Build and manage interpersonal relationships
Ability to influence and win respect
Know when NOT to manage
Politically sensitive
Active listening
Role model
Fairness</td></tr>
</table>

Source: Udo, N. & Koppensteiner, S. (2004). What are the core competencies of a successful project manager? Paper presented at PMI® Global Congress 2004—EMEA, Prague, Czech Republic. Newtown Square, PA: Project Management Institute.

Leadership is the most misunderstood ability looked for in a project manager and expected as a success criterion. Kumar (2009) touched on that employers expect leadership ability as well as management skill from project managers, and briefly explained the differences of these two concepts. As highlighted by Kumar (2009), the characteristics that define a successful project manager are to successfully complete the project through the methods and knowledge they have acquired, as well as to acquire new professional skills that develop themselves by thinking innovative. Leadership is one of these capabilities, but a successful project manager does not have to be a good leader.

A good IT project manager also needs organizational talent and must be able to work efficiently even under pressure and strict deadlines. As an IT project managers get a chance to gain entry-level experience and have the opportunity to get involved in projects with innovative ideas. Beyond all qualifications, a successful IT project manager looks far beyond the purely technical perspective when implementing holistic project management.

3. CHAPTER GENERAL VIEW OF SMEs IN TURKEY

SMEs and newly established companies have importance in creating income and employment. They use the advantage of not having a strict structure and they are able to easily adopt economical and technical changing conditions.

According to the data from the Union of Chambers and Commodity Exchanges of Turkey in 2017, there are estimated 3.5 million active SMEs which correspond to 99.8% of all registered entities in Turkey. The numbers reveal that SMEs make an economic contribution 62% of the whole country's Gross Domestic Product (GDP), 55% of the country's exports, and 73.5% of its workforce.

There is huge business opportunities and propositions in Turkey and other developing countries exactly like Turkey. Because, as a direct result of the scarcity of world giant companies, a suitable environment has been created for SMEs. Once they have started gaining a place in the market, other entrepreneurs who have a genuine business idea and spirit of entrepreneurship take courage from other established SMEs in Turkey. Thus, the number of SMEs increasingly extends out to the market and this expansionary force provides the international cash flow. In particular, entrepreneurs use the brain power in their respective country so, this is a golden opportunity for young population as well. Hereby, the successful free enterprises and management of initiative and incentives are able to prevent brain drain.

The total number of enterprises and SMEs are shown in Table.3. According to this table, the share of SMEs in Turkey's economy by 99.83% of all registered enterprises in 2019. Also, it reveals that obviously SMEs feed the economy almost by themselves.

Table.3. Total Number of Enterprises and SMEs in Turkey (2019)

Type	Number
Total Enterprises	3,652,521
Total SME	3,645,469

Source: KOSGEB SME Statistics, 2015.

According to the research results conducted by Union of Chambers of Turkish Engineers and Architects (TMMOB, 2017), only 6.5% of SMEs' employees have engineering diploma and they are not able to successfully develop technology and R&D projects. Also, the total number of SMEs is calculated as 2,892,670 in

2017 and a SWOT analysis is made for SMEs, and their strengths and weaknesses, threats, opportunities and competitiveness are analyzed.

The lack of qualified personnel in SMEs may be caused of this business failure. SMEs should tend to hire postgraduate and acknowledged expert to deskilling and increase the success rate. Vice President of Small and Medium Enterprises Development Organization (KOSGEB) (2018) expressed that "99.8 percent of SMEs operating in Turkey, 72.7 percent of employment comes from SMEs. The share of SMEs in investment is 58.3 percent, the share it receives from the export is 55.1 percent, and the production value added is 50.6 percent.

Table.4. SME classification in Turkey

Criteria	**Micro-Sized Enterprise**	**Small-Sized Enterprise**	**Medium-Sized Enterprise**
Number of Employees	< 10	< 50	< 250
Annual Net Sales Income	≤ TRY 3 Million	≤ TRY 25 Million	≤TRY 125 Million
Annual Financial Balance Sheet	≤ TRY 3 Million	≤TRY 25 Million	≤ TRY 125 Million

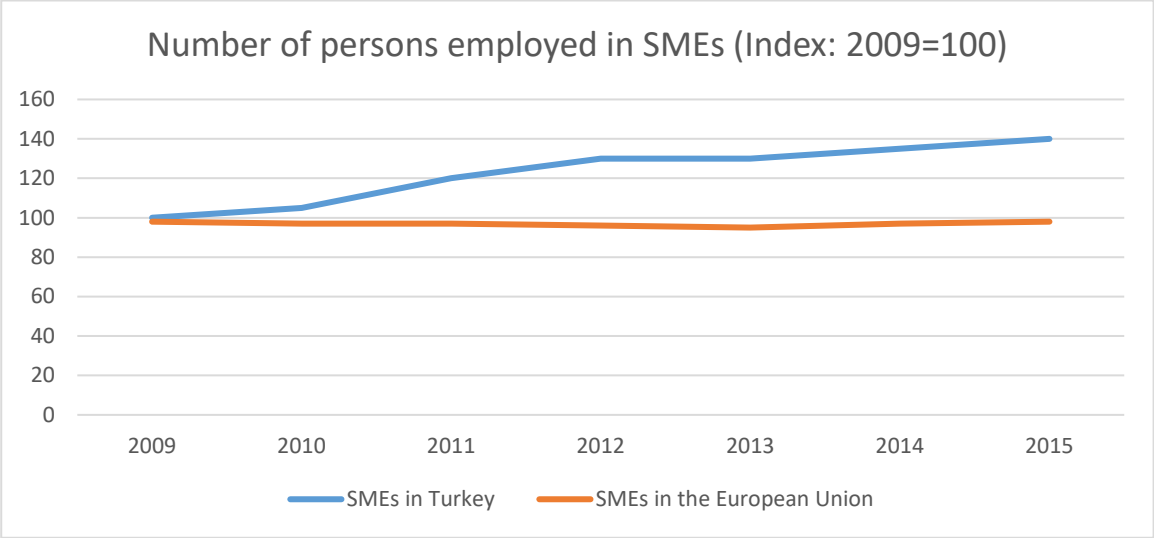
Source: The Union of Chambers and Commodity Exchanges of Turkey, 2019.

Table.2 shows the classification of SMEs in Turkey according to defined in the provisions of the "Regulation on the Definition, Qualifications, and Classification of Small and Medium-sized Enterprises" by Credit Guarantee Fund (KGF).

3.1. Comparison of SMEs in Turkey and EU

As described in the previous chapters, Turkey and EU has accepted similar parameters while defining SMEs. According to the European Training Center, the reason for Turkey investing so much in SMEs and have great successes is not a coincidence, and Turkey is a great market for the entrepreneurship and competitiveness. Besides of the European countries, Turkey has much more business opportunity in SMEs due to less number of corporate companies and qualified foreign institutional investors. As a result of this, SMEs have been totally participated in the upswing of the Turkish economy.

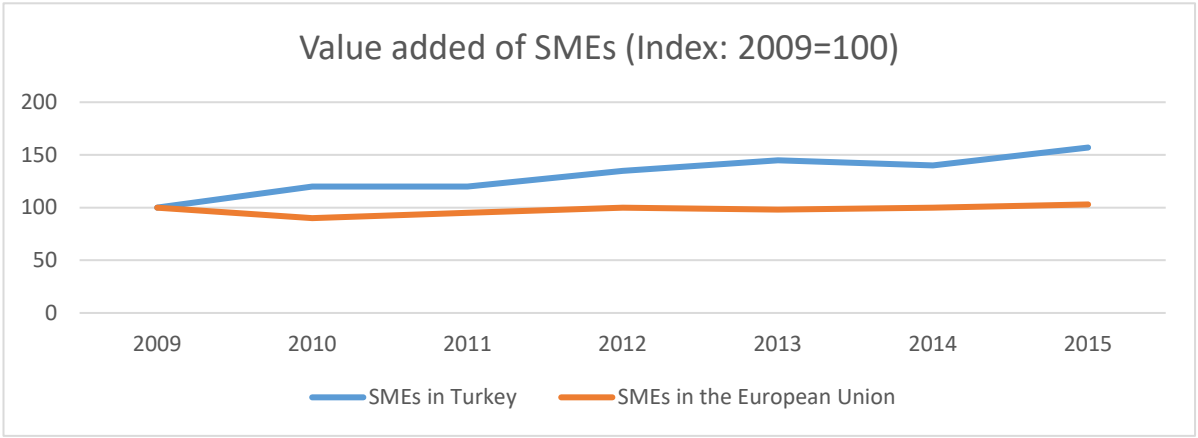
Graph.1. Number of persons employed in SMEs



Source: European Commission 2018 SBA Fact Sheet.

Graph.1 shows the changing in number of employee in SMEs in both Turkey and European Union. It clearly reveals that Turkey has been started using advantages of appropriateness of entrepreneurship with the help of potential labor force. Also, Graph.2 has a view of increment in value-added of SMEs. The graph does not show a huge leap between 2010-2011 and 2013-2014 however, once a general evaluation is carried out, there has been a 60% increase between 2009 and 2015.

Graph.2. Value added of SMEs



Source: Source: European Commission 2018 SBA Fact Sheet

Table.5. SMEs basic figures

Number of Employees		
	Turkey	**EU28**

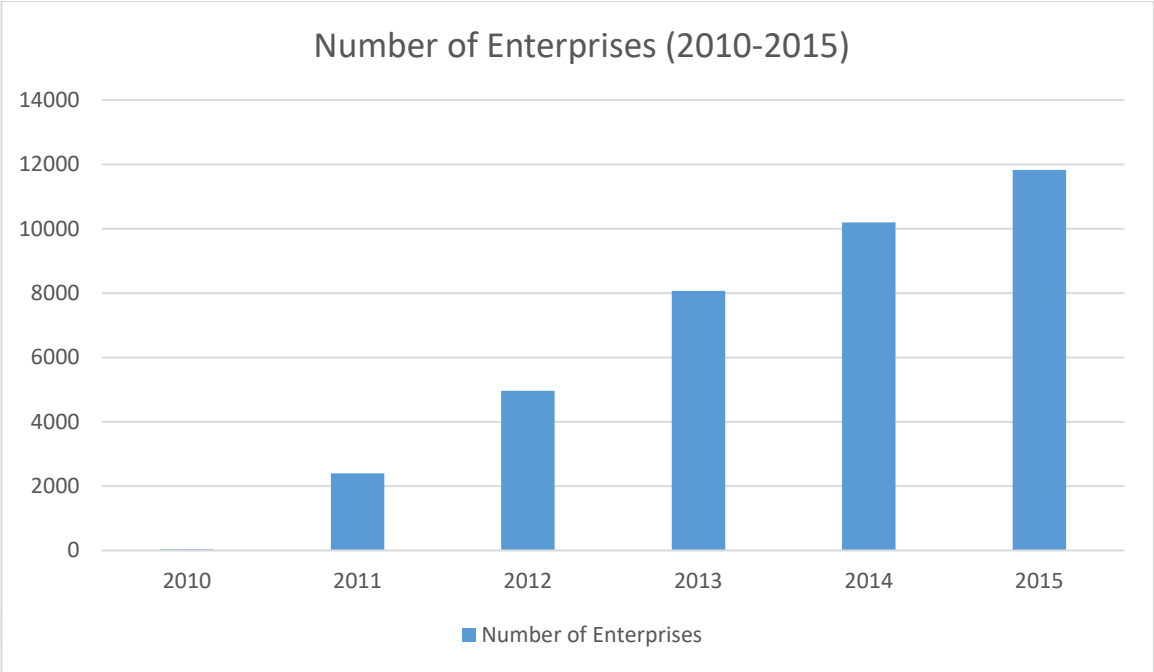
	Number	Share	Share
Micro	5,112,590	39.2%	29.0%
Small	1,754,015	13.5%	20.2%
Medium-sized	2,582,542	19.8%	17.1%
SMEs	9,449,147	72.5%	66.3%
Large	3,583,058	27.5%	33.7%
TOTAL	13,032,205	100.0%	100.0%
Value Added			
	Turkey		**EU28**
	Million €	**Share**	**Share**
Micro	30,075	15.3%	20.2%
Small	24,717	12.6%	17.7%
Medium-sized	44,596	22.6%	18.4%
SMEs	99,388	50.5%	56.3%
Large	97,539	49.5%	43.7%
TOTAL	196,927	100.0%	100.0%

Source: European Commission, (2015). SBA Fact Sheet 2018, Turkey, European Commission and Turkish Statistical Institute, The data for 2015 cover the NACE Rev. 2. sections B to J, L, M and N, including industry, constructions, trade and services, but not enterprises in agriculture, forestry and fisheries and the largely non-market service sectors such as education and health. SMEs in Turkey have an effect on the nonfictional business economy just as Europe.

3.2. Effects of KOSGEB on Employee Numbers

Especially, the number of employees in the SMEs increased by almost 40% between 2010 and 2014. The be-all and end-all of this massive increment is a government grant provided by KOSGEB. It is the most get applications financial support for the nonrecourse loans with zero-interest in Turkey.

Graph.3. Number of enterprises which benefit from KOSGEB new entrepreneur financial support, 2010-2015



Source: Namal, M. K., Koçancı, M., Aksoy, B. (2018). KOSGEB Girişimcilik Programı: Eleştirel Bir Değerlendirme. *Akademik Hassasiyetler. 5 (9),* 93-110.

Graph.3 shows the number of SMEs that get nonrecourse loans from KOSGEB between 2010 and 2015. Once Graph.1 and Graph.2 are reviewed together, the correlation is seen obviously. When the number of SMEs gets KOSGEB financial support, the number of employees in SMEs is increased by the same rate as well. Especially, there is a major increment with the help of government grand after 2011 year by year. Another advantages of increasing the number SMEs is offering new business opportunities to qualified employees and fresh graduates.

According to the OECD et al., *"To overcome the banking systems apparent inability to provide funds to support SME investment and related infrastructure investments, the government of Turkey has created a number of targeted investment credit program in support of SMEs. KOSGEB, in particular, is continuing to examine new approaches to improve the flow of finance to SMEs. The government has made credit available to state-owned banks (which are however moving towards privatization); and, to support the development of small scale industrial estates (SSIE), it has set up industrial areas with access to quality industrial space with the necessary utilities and central services. The government also subsidies SMEs purchases of capital equipment through a series of tax incentives and offsets. The administrative arrangements for this tax relief have recently been simplified to*

remove an explicit requirement for government approval. The credits now flow as a part of the tax system with many fewer paperwork requirements. Similar tax credits are used in many countries but are usually intended to augment private saving and investment rather than to replace private saving."

3.3. The Place of IT SMEs in Turkey

Almost all SMEs have a relation with IT even if they produce advanced technology or not. Software solutions, hardware improvements, cloud environments, and e-commerce platforms are the most widely implemented technological solutions among SMEs. The way to increase this technology production is SME participation in R&D. That is to say, SMEs don't have to carry on a business just in technology development however, they need to set up a department to monitor and assist the research and development activities. A scale mismatch between R&D and SMEs has always been experienced in every country. European countries are trying to overcome this incompatibility by treating SMEs. The orientation to the R&D work in Turkish SMEs is weak due to the risk it poses.

The software is one of the most invested sectors in the world, regardless of company size. Yardımcı (2019) expressed that the size of the IT sector in Turkey reached 25 billion dollars, of which about 16 billion pounds chapter is divided into the software. Informatics is a growing market in Turkey and stated that they expect to grow exponentially over the next few years. Barut (2018) said the size of the IT sector in the world is around 5 trillion dollars, and the size of the software sector is 3.5 trillion dollars. However, these numbers are decreased in Turkey according to the data get in 2017 so, the size of the IT industry in Turkey only 25 billion dollars, while the software sector size is around 6 billion dollars. Yardımcı and Barut (2019), revealed the same numerical data and necessity of leading to investment in software industry as soon as possible. According to the same research result, software sector showed a growth of about 20% in 2017 and the highest growth in the IT sector was realized compared to the previous year, and the growth rate is estimated to reach 25% in 2018.

Turkey's digital economy transformation needs to get more attention and incentives by entrepreneurs. Especially alternative software products may be developed instead of using the ones from abroad and paying the monthly fees. As explained in previous chapters, successful projects are at the core of successful projects, and the key elements of project management are project managers and

project management software. These major elements also require financial assurance for qualified staff and regular budget allocation.

3.3.1. Educational Opportunity

The first of these, the lack of qualified employee and inability of cooperation between universities and companies. Then, the educated young students or newly graduates may have a promising future once have a fair crack of the whip. Herein, industries need to be in cooperation with universities to be a talent scout and to get the fresh brains involved in their team. At times when the unemployment rate is so high, the systematic establishment of such collaboration is a great advantage for potential job seekers and sectors alike. One of the reasons why European countries are ahead in this regard is that they provide numerous opportunities for their graduates and students. Working with a dynamic team, especially when the brain's learning speed is high, can create creative products and innovative solutions.

3.3.2. Financial Assurance and Support

In addition to this, being in financial difficulties undermine the process of new attempting. The lack of venture funds and encountered problems in applications related to R&D incentives worry the entrepreneurs to embark on an enterprise. According to the research results conducted by Turkish Informatics Industry Association TUBİSAD, companies operating in the IT sector could not benefit from incentives sufficiently. In 2011, it was determined that 34% of TUBİSAD (2011) registered member companies that participated in the study benefited from incentives and 21 companies used only 34.3 million TL incentives.

Besides, TUBİSAD (2011) revealed that the hardware, software and services, electronic communications, e-commerce, defense industry, call center, mobile devices market total turnover of 66.7 billion TL in Turkey in 2011. Barut, E. (2018) expressed this number as 25 billion dollars in 2019 so, we can deduce that almost twice as much since 2011. This growth rate is not satisfactory when a span of seven years is considered due to 53 percent of TÜBİSAD members who participated in the survey expected growth between 6 and 10 percent in the IT sector in 2012.

3.4. SMEs in Izmir

Izmir is one of the three largest cities of Turkey and it has many high population zone especially includes young and employed population. Although the sector is not as vivid as Istanbul and Ankara, it has started to attract investors in recent years.

Table.6: Percentage of Total Fund given by KOSGEB and Percentage of Total Number of Enterprises

City	Percentage of Total Fund (2018)	Percentage of Total Number of Enterprises (2016)
Istanbul	14%	24.2%
Ankara	10%	7.2%
Izmir	6%	6.1%

Source: KOSGEB. (2018). 2018 Yılı Faaliyet Raporu.

Considering the distribution of funds by provinces which is shown in Table.6, it is seen that the first 3 cities are Istanbul (14%), Ankara (10%) and Izmir (6%), respectively. Approximately one-third of the total amount of funds provided by KOSGEB in 2018 was used by SMEs operating in these three provinces. This distribution shows parallelism according to the distribution of enterprises based on provinces according to 2016 data of TUIK Business Records. According to the mentioned statistics, 24.2% of the enterprises in our country operate in Istanbul, 7.2% in Ankara and 6.1% in Izmir (KOSGEB, 2018).

KOSGEB funds help to reduce unemployment in Izmir and keep going to bring it down as new enterprises are established year by year. KOSGEB İzmir Southern Service Center Manager Canakci M. said that KOSGEB support of 10 million TL was provided to İzmir between 2011 and 2014. Between these years, 444 applied intervention training was given and nearly 12 thousand candidate entrepreneurs received training. Unemployment rates declined in İzmir, which ranks first in the country in the last three years before 2015. In 2012, İzmir ranked first in the country with 14.7 percent, and in 2014, it ranked sixth in unemployment (Halkbank Kobi, 2015).

Table.7 compares the number of SME workplaces in 2014 and 2015 by cities. Even in a year, almost 5000 enterprises have been established in Izmir and offered lots of business opportunities.

Table.7. Top 5 cities having the highest number of SME workplaces in Turkey

City	Number of SME workplaces (August 2014)	Number of SME workplaces (August 2015)
Istanbul	480,341	497,023
Ankara	129,794	134,695
Izmir	113,913	118,653
Bursa	66,983	70,074

Antalya	66,905	70,072
Other Cities	773,146	812,535
TOTAL NUMBER	1,631,082	1,703,052

Source: Small and Medium Size Enterprises Statistics in Turkey, 2015.

Almost all SMEs are agreed on limited business opportunities and market shrinkage in Izmir. Despite the fact that new investments are made and enterprises are established, the number of projects is very low and the customer portfolio is not wide in Izmir. So, we can not speak of excessive workload or creative projects in IT sector. In large part of these SMEs develop products or projects for the expatriate clients. Mostly, due to absence of physical products in the IT industry, striking deals with the clients in the abroad or another city is very common not just for Izmir or Turkey.

Still, they need to successfully complete their projects to generate income and pay strict attention to not losing their clients or reputation. Actually, this situation shows that moving the business on is harder than establishing a new company or startup. The entrepreneur need to have a really innovative product or service idea before starting this process. With the help of conduct research, they can make competitor analysis to know their rival companies by using marketing research methods. That's why, before starting this process, a detailed proposal which includes all analysis and details about business area of the new company has to been prepared to reduce the risks.

On the other hand, qualified employees prefer to work in Istanbul or Ankara instead of Izmir because of the many career opportunities and job positions. Also, there is a regional wage difference, when average salaries are considered in Izmir, Istanbul, and Ankara. For this reason, Izmir needs to attract more entrepreneurs and investors for the recovery of the market.

4. CHAPTER FIELD STUDY: THE STRUCTURES, APPLICATIONS, AND APPROACHES OF PROJECT MANAGEMENT PROCESSES IN IT SMEs

4.1. Field Study Methodology

In this field study, the objectives selected and major factors determined in the research and literature review phases were targeted. This research period gave a point of view of the essential elements of the project management body of knowledge and project management applications. The core objective was analyzing the project management capacity of SMEs in the IT industry. Based on this main purpose, a sample group was created and determined as the target audience of the research. The common feature of this sample group is being IT SMEs located in Izmir. Thus, it was aimed to obtain the rightest sample data by addressing a more specific subject on this research.

Using the results of the literature review, the survey questions were determined to collect data in the most correct way. Basically, to gather identification details, comprehensive feedback and specific answers to open questions were the primary objectives during this field study. Face-to-face interview also called in-person interview is used as survey method to get data from SMEs. This survey method is chosen to minimize nonresponse and maximize the quality of the data collected. Also, clarifications and quick responses are able to prevent misunderstanding and incorrectness during the interview.

Basically, survey questions were split into three main sections, namely, profile, project management applications, and complementary general questions to categorize data and keep it organized.

4.2. Profiles of Interviewed Companies

The interviews have only with SMEs in Izmir and IT sector is chosen as a research area. Face to face interviews were made with 16 SMEs included; 2 micro, 5 small and 9 medium-sized enterprises. SMEs in the sample group are located in the technoparks and business centers in Izmir. In addition, all the SMEs interviewed work in the IT industry and all develop software products. These SMEs, which aim to serve their customers with their own software products or using other software products, are in the market with their custom technological solutions. A clearly

defined project mission was achieved once the field study requirements completely met by our sample group.

To get exact information, the interviews are arranged with the most knowledgeable person in the SMEs. After getting in touch with project manager, product managers or executives, and messaging through LinkedIn, face to face interviews were scheduled with professionals who wanted to be a part of this research. The prepared in-depth interview questions are listed below:

SECTION A: PROFILE QUESTIONS

I. When your company has been established?
II. How many employees do you have?
III. Do you have any branches?
IV. The origin of your company? (Turkish or foreign investment)
V. What is the overall scope of your activities? (services, products, etc.)
VI. The job title of the interviewee in the company

SECTION B: QUESTIONS REGARDING PROJECT MANAGEMENT APPLICATIONS

I. In what areas/processes do you use project management applications in your projects?
II. How many projects are running a the same time in your organization and your current project number?
III. What is the approximate number of projects you have completed so far?
IV. Do you have a separate unit responsible for project management? How many people are working?
V. How many staff responsible for project management?
VI. Do you receive external support for project management processes? If yes, what kind of supports?
VII. How long have you been using the method in your processes?
VIII. In which processes you use project management in your organization (planning, production, evaluation, service provision, risk management, communication, etc.)
IX. As an IT company, you are one of the sectors that can support project management methodologies with the most qualified technicians. Is there any software that you use to implement the strategies you set? If so, which one?

X. Do you have a specific budget for implementing project management strategies? (Qualified employee, paid software, trainings etc.)

XI. What are the alternative or potential project management strategies you considering?

XII. Does the institution participate in training or certificates related to project management? If yes, which ones?

XIII. In what areas do you think the project management contributed to your organization?

XIV. Which elements of project management do you consider important for your organization?

XV. What are the areas in which you have the most difficulty in the project management (finding human resources, finding financial resources, timing, technological infrastructure, etc.)

XVI. In general, to what extent do you use project management in business processes, innovation and growth management?

XVII. What is the contribution of project management to risk management and reducing risks?

XVIII. Do you think that project management increases your business your business capacity?

SECTION C: COMPLEMENTARY GENERAL QUESTIONS

I. In your opinion, what is the situation of SMEs in Information Technology?

II. What are the key strengths and weaknesses of your company? What is the impact of project management on these issues?

III. What do you think about deficiencies related to the project management process in Turkey? What are the deficiencies in Izmir?

IV. Do you use any external resources for project management processes? (EU Funds, Ministry funds etc.)

4.3. Findings

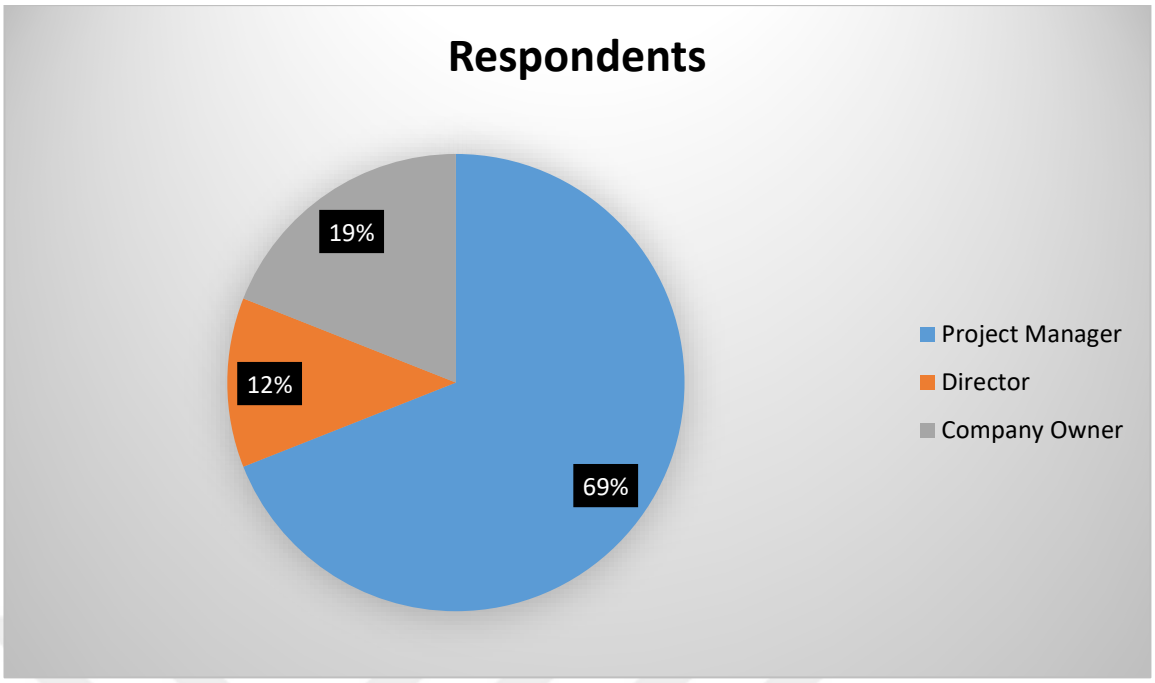
With the widespread concept of project management, entrepreneurs should at least have an idea of the project management tools and methods used in the market. They need to ask themselves “What are my competitors using? How can I improve my efficiency? What tools are there on the market to facilitate my business?” and follow the path by answers. Firstly, project management shouldn’t be considered as luxury. It definitely has to be accepted as obligation or necessity and globally

approved. Especially as a company owner, entrepreneur needs to do research on the tools or software to choose the appropriate one. No matter how hard it is to create a structure from beginning, once it has settled down, only improvement and development is required.

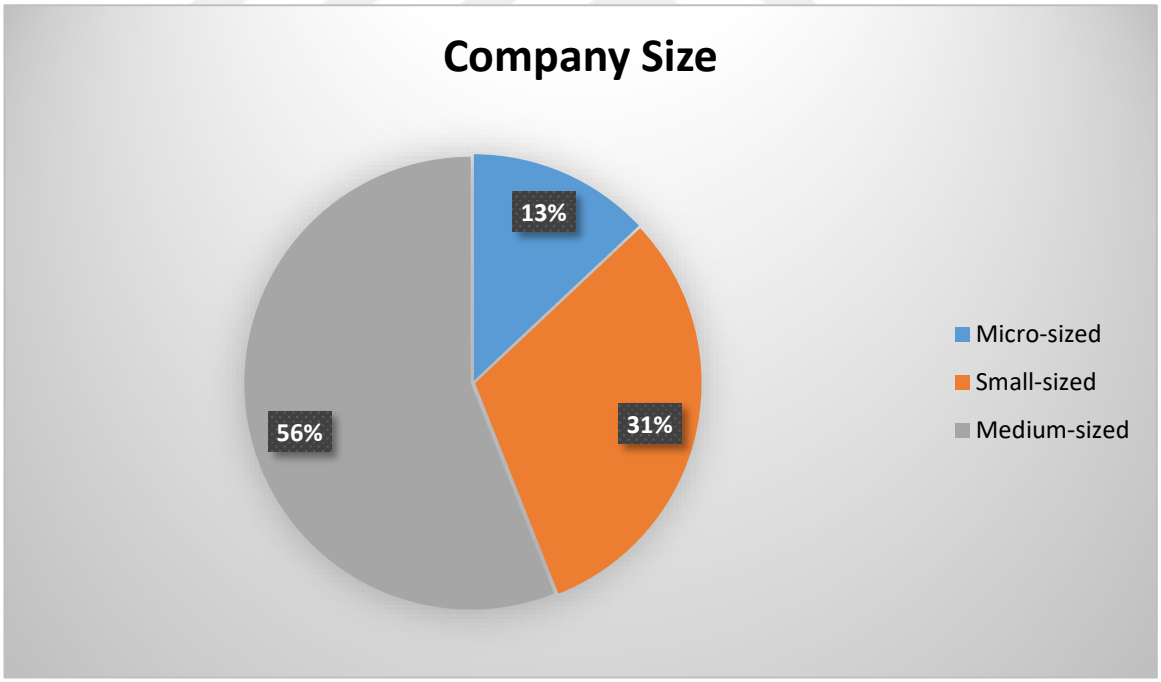
This research use profiles analysis as a base and come through SMEs' business principles by broad scanning. Basically, in-depth interview questions were prepared section by section to analyze while thinking on answers to the questions. With the help of this overall review, managers were able to evaluate the companies and their business processes with pros and cons. As a threshold matter, it aimed to make an impression the company identity. Quantitative data such as foundation year, number of employees and number of branches were collected and target company size was confirmed by this numerical data. Capital investments were addressed only as foreign and domestic capitals so, any numerical data wasn't requested to analyze capital sum. Also, service areas and product details are used to determine the company's exact location in the IT industry due to already has a quite extended and wide product range.

However, our study revealed that the interviewed SMEs in Izmir do not have a specific project management process outline and they are unaware of importance of following the process. Firstly, they find the professional tools and software expensive and unnecessary. Instead of using them, they are trying to keep all information, files, folders, and contents on the cloud environments which does not have any special functionality or feature for successful project management. These SMEs waste time by doing everything manually with old school ways such as keeping data in Excel or Word files. And, they don't realize what did they miss until the project is messed up. Budget is everything to keep the company opened but they are not aware of the positive returns of using these tools even that means go to the expense of them. Beyond the tools or software, a major part of SMEs do not pay enough attention to hire qualified project manager. Even some of them do not have a project manager or director. Or they hire managers who does not have any management or technical background just for paying less salary.

Graph.4: Respondent profile



Graph.5: Business Size



A total of 16 project management professionals participated in the study. Of those who participated in the research, 11 respondents correspond to (69%) are project managers (Graph.4). The participation of 3 company owners represents (19%) and the participation of 2 managers represents (12%). The respondents represent three different business sizes as 2 micro-sized enterprises (13%), 5 small-sized enterprises (31%), and 9 medium-sized enterprises (56%) (Graph.5).

Table.8: Project Management capacity in SMEs sample group, 2019

Company Code	Business Size	Project Management Staff/Unit, External Support	Use of Project Management Software, Budget for Project Management Strategies
C1-IZ	*Micro-sized*	None PM: none external support	Free software; no budget
C2-IZ	*Small-sized*	PM; none external support	Paid software; yes budget
C3-IZ	*Small-sized*	PM; none external support	Paid software; yes budget
C4-IZ	*Medium-sized*	PM; none external support	Paid software; yes budget
C5-IZ	*Medium-sized*	PM; none external support	Paid software; yes budget
C6-IZ	*Medium-sized*	Project management department; none-external support	Paid software; yes budget
C7-IZ	*Medium-sized*	PM; none external support	Paid software; yes budget
C8-IZ	*Medium-sized*	Project management department; none external support	Paid software; yes budget
C9-IZ	*Medium-sized*	PM; none external support None PM; external support	Paid software; yes budget
C10-IZ	*Small-sized*	PM; external support	Paid software; yes budget
C11-IZ	*Small-sized*	PM; none external support	Paid software; yes budget
C12-IZ	*Medium-sized*	None PM; none external support	Paid software; yes budget
C13-IZ	*Micro-sized*	PM; none external support	Free software; no budget
C14-IZ	*Small-sized*	PM; none external support	Paid software; yes budget
C15-IZ	*Medium-sized*	PM; external support	Paid software; yes budget
C16-IZ	*Medium-sized*		Paid software; yes budget

Source: Based on the data obtained through face-to-face interview.

As seen in Table.8, interviewed SMEs are coded as C1-IZ, C2-IZ, C3-IZ, etc. This table, which aims to show the relationship between company size and project management capacity, was created according to the data collected during the face-to-face interviews. Table.8 shows that only two micro-sized presents 12.5% of total

interviewed SMEs and one small-sized enterprises presents 6.25% of total interviewed SMEs did not prefer hiring project manager staff. Besides, C1-IZ and C10-IZ highlighted that they are definitely planning to involve a project manager in their projects and implement an efficient project management method. As for use of project management software and budget, the data shows the same result just as project manager staff/unit and external support. C1-IZ and C10-IZ stated that they still do not have a certain order and system and therefore they try to keep expenses to a minimum.

Table.8 shows that companies using free project management cannot allocate a budget for software and trainings. Also, C1-IZ said that they used free project management software in this economic development process and that they did not have too many problems due to the low number of employees.

Besides, the other part of SMEs have a multi-layered project management structure or just a qualified and experienced project manager in the IT industry. Multi-layered project management structure includes hierarchy in itself and the decision making process takes longer than a single project manager. However, even the developers and managers are not happy with applying this multi-layered project management structure due to missing information between layers and uncertain responsibilities despite using a basic project management tool to keep all team members on the same page. However, it's not enough to follow up on the project status and keep all documents organized. The reason of keep going to use it is that the company has not a budget to pay for a professional project management tool.

They also confess that they don't have sense of ownership even being part of a management team because of the limited authorities. Especially one of the SMEs in this research assign the development, test and production process on different project management department members. In fact, the one who is responsible from development does not have an idea about what's happening in testing or production period. They don't get involved themselves in all project life cycle phases so, they feel a lack of sense of ownership and it directly affects their efficiency and performance.

On the other hand, SMEs who have one or two (the number of project managers can be increased according to the project number) project managers use paid and professional tools in the company. Besides project management tools, they prefer to use various web applications and cloud environments to increase efficiency

by becoming organized and making use of technology. Because of systematic task and time management, they don't have trouble with confusion or misunderstanding.

4.3.1. Project Management Staffing Plan

Table.5 shows the project management staffing plan and their numbers. The most common staff type is hiring one or more project manager and it's calculated as 68.75% of all SMEs in this research. In these 11 companies, project managers have equal responsibilities, and they share the projects among them. There are only temporary exceptions for the junior level project managers. When the SME hire a junior project manager, they give quick orientation training and do not directly get the new project manager involved in projects. One of the senior project manager or project director is responsible for a new junior project manager until being ready to start by himself/herself. C9-IZ revealed that they hired the project manager who is currently working in their company as an intern at first, and because the project manager did not work in another company before, the adaptation to their systems is very good, and results are quite productive.

According to the result of this research, 18.75% of the total number represents the SMEs that not prefer to hire any project manager staff. The common feature of these 3 companies is developers are directly get involved in the management process so, this situation is only observed in this kind of SMEs and they are micro-sized enterprises.

The third staffing plan is setting up a project management department or determining separate roles and it is applied in 12.5% total SMEs. Although it seems systematic at first glance, the employees do not find this method efficient. Because it contains a lot of layers and it becomes difficult to hierarchize precisely and set the boundaries. *C6-IZ said "Agility and speed are very important in software projects. As the roles controlling the project management increase, we observe a serious slowdown in this speed. Projects and team members must be very well analyzed before applying a project management method to a company."*

Also, only 18.75% of the total enterprises occasionally need to get external support. These SMEs hire freelance or project-based project managers to join the team temporarily. They avoid hiring a full-time project manager if the workload is temporary. Thus, they find this option budget-friendly. As expressed by C10-IZ, *"Micro-sized companies have very few employees. There are a total of 4 employees in our company, including me. We need time to improve the internal income and*

expense balance. In this process, although I tried to manage the projects as an entrepreneur, however, I could not achieve the efficiency I expected due to other responsibilities. Since hiring a salaried project manager would also be costly, I decided to get an external project-based support. Since he is a virtual project manager, we could not see the positive effects in team communication and team spirit. But he was a life saver in scope preparation, documentation and reporting processes."

4.3.2. Use of Tools, Software and Applications

According to the result of this research, the percentage of use of digital project management is better than expected at the beginning of the research. All 16 SMEs interviewed use digital project management and communication tools. Even though, 2 micro-sized enterprises that present 12.5% of our sample group, select the free plan instead of the paid ones, that's good to choose the appropriate plan by their needs. SMEs that develop more than one project at the same time use these tools more efficiently than others. So, they are obviously aware of the importance of using digital software in the 21st century due to they are already developing in the IT industry. Although we cannot comment on how efficiently they use it, we know that it is part of their processes.

C7-IZ expressed that *"Project management practices are of vital importance, especially in the IT industry. Companies that develop and produce products on technology are already living together with technology. We have integrated project management practices that we use in all our processes, including contract preparation, scoping, planning, reporting and documentation. We don't even have to wait a long time to see the pace of our efficiency."*

Expressing that they see the project management applications as the same house rent and invoices, C4-IZ said that they do not intend to cut the budget allocated to these applications and tools.

4.3.3. The Areas Which They Have More Difficulties

Each SMEs are able to select more than one difficulties in this research. The most widely encountered difficulty is financial resources in SMEs. Thirteen company which corresponds to 81.25% of the all interviewed SMEs admit the most challenging element of project management is financial resources. The project managers said that they have to tighten the belt once any paid resource is necessary and employees ask for a raise. Also, when an expense is necessary, and the

management staff has to convince the boss to pay for it. They said there were tools waiting to be paid for a long time because their bosses did not approve due to financial liabilities.

The second common difficulty is determined as timing by SMEs that present 50% of our sample group. Deadlines, ETAs, milestones, and date of client updates are the nightmare of project managers due to requires pretty prophetic prediction ability. That's why almost all project management tools include various time tracking features. Some concepts need to be repeated frequently, such as what percentage of the tasks are completed, how long the remaining part will take. The project managers revealed that the main problem is finding a compromise with the client when the project or any task has a delay.

As highlighted by C8-IZ, the budget is a very important factor especially for a city that does not have a very active market like İzmir and although they use paid project management software, they need additional project management tools. They expressed that while some project management tools have similar tools, extra plugins and tools are required for specific areas such as time management.

CONCLUSION

The result of this thesis reveals project management processes that distinguish SMEs from large-scale companies. The managerial perspectives of entrepreneurs directly affect the success rate of companies. To prevent this, red flags are determined and potential risks are clarified in many respects. The positions of the company manager and project manager in the organizational structure and conceptual differences in their responsibilities are specified. Entrepreneurs and bosses monopolizing all processes prevent the successful completion of project life cycles. Therefore, hierarchical structuring should be the priority for all companies, regardless of their size. Different organizational models are developed for corporate and small and medium-sized companies, and necessary steps are determined to implement the structure that is able to meet their needs. Tall and flat hierarchy are the most widely used ones and their positive and negative effects on internal processes are compared. And consequently, flat hierarchy is accepted as the optimum way to make the continuation of the process productive in SMEs. Minimizing the number of layers helps the whole team, especially in terms of time management and time consistency.

Organizational charts created based on the most appropriate hierarchy show the roles and limits of authorities sharply thus, the boss and project manager distinction can be clearly seen in these charts. The position of the project manager is quite clear in these schemes prepared for internal processes. So, the entrepreneurs who aim to grow gradually should show ultimate attention to do development plan deliberately to create a heightened awareness in the business community. One of the reasons why this process is so important for SMEs is preventing overwhelmed with responsibilities. Because, efficiency does not mean the number of completed tasks, it is calculated based on the success rate and spent hours.

Creating the project manager position separately reduces the potential risks that may arise from company managers and micromanagement is the most common of these negative risks. Micromanagement is like a nightmare scenario both executives and employees, and its most damaging consequences are psychological fatigues. Especially, it creates unnecessary pressure on the employees and takes their motivation away so, this circumstance directly affects labor productivity. In the IT sector, product development requires a cool head and brain power due to employees

have to use their life for developing algorithm and coding. That's why psychological breakdown and burnout should always be considered by the managers.

Another advantage of using organizational structure is new job positions in the firm. Instead of laying too much burden on one person, it is easier to determine exactly which tasks are assigned on who. At this point, project management and in-group communication tools have a great importance to successfully complete this period.

This research investigates the usage of digital tools and project management software in SMEs. Basically, team collaboration and project management applications are used to stay organized. Although the expectations at the beginning of the research are not high, the use of digital tools by all companies interviewed shows the speed of development in recent years. They have found appropriate plans for their business in terms of both budget and performance, and have completely included them in the project management processes. We can even say that they shape and reconstruct the processes according to these applications. By combining different tools, they keep both internal and customer communication and current project details that can be accessed instantly. By combining different tools, they keep both internal and customer communication and current project details that can be accessed instantly. Since the research is done in IT companies, the participants do business in the same market with these applications. For this reason, these SMEs consider them necessary and effectively use their features.

In the IT companies, firms develop their projects based on technical issues and updated technical news, and all processes are intertwined. That's why an IT project manager definitely has to a technical background as distinct from other business lines. Even if programming and software skills are not must, they should be able to master the tools used.

Financial funds and government aids for SMEs help them plan processes more systematically. All these supports increase the success rate of the projects without financial anxiety and enable them to grow rapidly. This means that more business opportunities and reducing unemployment, especially where jobs are limited. While making the entrepreneurs more courageous, they can allocate the necessary budget for project management and visibly increase the success rate. However, proper and detailed planning does not mean successful implementation. At this point, project managers come into play and establish control.

As a consequence of this research, SMEs which work on IT in Izmir are widely and efficiently use project management methodologies and make their firms ready for implementing processes. Although they do not receive government support, they sufficiently allocate monthly budgets for project management and team collaboration applications. If necessary, business process outsourcing and process reengineering are applied with the help of innovative approach.

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