

# Information Management, Organizational Intelligence, and Innovation Performance Triangle: Empirical Research on Turkish IT Firms

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## Abstract

The study aims to investigate whether information management practices and organizational intelligence have an effect on a firm's innovation performance within the framework of resource-based theory via empirical field studies in technology and information technology (IT) companies. The study is mainly conducted on technology and information technology companies operating in the Marmara Region of Turkey. The reason for choosing technology-intensive companies is that the scales used for the survey are organization types, which can accurately measure the institution's knowledge, organizational intelligence, and innovation performance. The survey collection process includes the data of 495 managers, collected between 2018 and 2019. In this study, in which the effect of the sensitivity between information management practices, the sub-dimensions of organizational intelligence on innovation performance, and financial and growth performance are examined within the framework of resource-based theory, (i) a significant relationship is determined between information management practices and both a firm's innovation performance and its financial and growth performance; (ii) innovation performance is found to have a direct and positive effect on a firm's growth and financial performance; (iii) while the presence of perceived knowledge, which is one of the sub-dimensions of organizational intelligence, has no strong impact on innovation performance, mental model development has a direct and positive effect on innovation performance. The fact that there are few studies in the literature, to the best of our knowledge, examining information management practices, organizational intelligence, innovation performance, and financial and growth performance together increases the relevance of this study. Therefore, it is believed that the study will contribute to the literature with theoretical and managerial implications.

## Keywords

information management and practices, organizational intelligence, innovation performance, financial and growth performance, technology and IT firms

## Introduction

The digital revolution has fundamentally transformed and improved sustainable development and social transformation (Makori, 2020). This has led to constantly changing economic trends and expanding competition in domestic and foreign markets. As such, organizations need to increase their innovation activities in order to quickly respond to related demands and opportunities. Moreover, organization members, who want to reach higher limits, must also respond quickly to this environment (Opoku, 2015). Therefore, the information sector is invaluable, as it meets the need for immediate information via individual and corporate websites, supports production, and produces software and technologies designed specifically for organizational intelligence, department structure, and business functions. The resource-based approach also provides a theoretical basis for using human resources as part of a firm's strategic

value. The fact that companies turn to valuable and inimitable internal resources to gain a competitive advantage increases the strategic importance of using human resources (Becker & Huselid, 2006).

Organizations use their resources and capabilities to manage information and improve defined tasks (Brinkhues et al., 2014). Information management practices are related to an organization's ability to effectively manage its life cycle, which includes information detection, collection, organizing, processing, and maintenance (Detlor et al., 2006). Moreover, information management practices include all systems and

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processes that can be used to create and use corporate information to develop or manage an organization more efficiently. These practices typically focus on collectively managing activities that lead to a change of people, groups, and organizations with information collection, storage, and dissemination activities (Chatzipanagiotou, 2017). These practices typically focus on collectively managing activities that lead to a change of people, groups, and organizations with information collection, storage, and dissemination activities (Chatzipanagiotou, 2017). The goal of this study is to define the factors affecting information management practices and organizational intelligence of technology and information companies and to investigate how these factors are reflected in the innovation, financial, and growth performance of the firm. Literature review and survey application within the scope of the study methods have been used. For this, a theoretical section was prepared within the framework of the research question by first scanning the literature. Then, the model was developed and the main hypotheses and sub-hypotheses of the research were put forward. The main hypothesis is "Information management practices and organizational intelligence directly and positively affect a firm's general performance." Then, the survey study was completed and the data obtained were analyzed. Finally, based on the findings, hypothesis tests were carried out and comments and suggestions were made for researchers and academicians.

Looking at recent literature, a study conducted by Wang and Wang (2012) on 89 high-tech companies in the Jiangsu province of China revealed that open or closed information sharing supports innovation performance. Information technologies (IT), defined as systems that collect information, consist of processing, storing, and reporting data used by management to make decisions. The success of each organization largely depends on how well it uses information technology to manage information and information resources (Karadal & Saygin, 2011). In recent years, many organizations have made high-volume investments in information technologies. This is to ensure that the quality of information management is equal to that of the competitors or exceeds the competence of the information management performance of competing companies to provide the customer with improved product and timely service quality and to gain competitive power (Ajibade, 2017).

The fact that firms develop and use their innovative capabilities is accepted as a critical determinant of their performance. This capability has become critical for firms, as it allows them to develop or maintain a competitive advantage due to increased competition levels and decreased product life cycles (Artz et al., 2010). Firms typically focus on innovative processes and ideas to increase organizational innovation capacity and facilitate innovation performance. To ensure this, proactive and aggressive measures should be taken to support corporate innovation performance (Song et al., 2019).

Organizational intelligence includes the knowledge, experience, information, and perception of organizational problems, which can create a smart organization by focusing on knowledge and learning (Torkamani & Maymand, 2016). Organizational intelligence represents an organization's intellectual ability to integrate human and technical (information and communicative) potential used in solving concrete organizational problems (Simic, 2005). It is considered as the ability to increase members' organizational performance, to develop information jointly, and to discuss the meanings of organizational learning within the organization (Neyişci & Erçetin, 2020). According to Albrecht (2003), organizational intelligence is an organization's capacity to use all its mental powers to fulfill its mission. Further, Nasiri et al. (2013) revealed that, if organizations use their organizational intelligence systematically with full capacity, diversity will be created in a firm's financial resources, new product and service provision will be improved, and new markets will be developed, thereby leading to the positive innovation performance of organizational intelligence.

In a study on 103 managers, Kahkha et al. (2015) revealed that organizational intelligence and its components demonstrated a significant and positive correlation with innovation management; further, while Kalkan (2008) proved that the relationship between the components of organizational intelligence and firm performance was positive, organizational innovation was found to be positively related to firm performance. Within this conceptual framework's scope, the effects of information management and organizational intelligence factors on the dependent variable of the study were examined together.

## Theoretical Background

### *Information Management Practices*

The status and importance of information management in organizations were mentioned in many studies conducted on management (Costa et al., 2020). Information management involves issues related to the information that a firm collectively knows how this information is obtained, whether it is used efficiently, as well as developing applications to manage this information, and achieving sustainable advantages (Ruuska, 2005). Canbaz and Yıldız (2014) defined information management as the unity of processes that enable organizations to obtain information from potential sources, transform and produce it, and transfer information to those concerned in order to achieve their goals. Uit Beijerse (2000) defined information management as producing information and fulfilling an organization's purposes. Individuals reinforce their experience and expertise through information management (Odabaş, 2008). According to Vijayakumar (2011), who defines information management as the art of organizations to create nonmaterial values, the most important feature of information management is that it is a system

that defines information assets and acts upon them. The process of information management practices in businesses generally takes place in five stages, that is, the establishment, acquisition, classification and storage, transfer, sharing of the information system and its use, and evaluation (Liao, 2003). The information management system is an integrated user-machine system that provides information to support an organization's operations, management, and decision-making functions. System computers use manual procedures, analysis, planning, control and decision-making models, and a database (Ngirigacha et al., 2019).

Information management systems integrate people, processes, and technology to achieve sustainable results. In these systems, using the collected and produced information and putting it into practice is essential (Alsalim & Mohamed, 2013). Uzun and Durna (2008) argue that information should be used after determining the right time and the right place. Each organization is classified by its members, after obtaining the necessary information, according to its own structure, objectives, culture, and strategy. Information management practices involve the perception, collection, regulation, processing, and maintenance of information. The performance levels an organization can achieve depend on its ability to manage and use information resources to help its overall performance (Ajibade, 2016). Bowman and Turner state that information management practices should include the development and implementation of a policy and strategy that provides a framework and guidelines for data creation, data storage, data processing, distribution, and use of information (Opoku & Enu-Kwesi, 2017). According to Porter (2009), information used by businesses is an important criterion for both their and their competitors' aggressive or defensive competitive moves. For example, if a business describes in detail a new product, service, or idea that it will launch soon, its competitors can focus their resources on producing this product or idea. In cases when information about the new product is uncertain, competitors will implement defense strategies contingent on the estimated form of the new product. While determining the innovation strategies that will be used, senior management should correctly take the information intelligence from the environment they are in contact with and direct this information to compete in a way that will save time and energy. Regardless of the point of view, information management systems are an essential factor that adds efficiency and speed to every business.

### *Hypothesis Development*

When the literature that covers information management practices is examined, it is determined that new generation information management practices are considered as a direct cause and addressed as an independent variable in almost all studies. Obtaining and classifying the information and integrating it with new technologies to form a meaningful whole were considered as independent variables by researchers in

the cause–effect relationship. These studies and the results obtained are summarized in Table 1.

Considering all these studies, the most striking detail is that empirical research is carried out on studies that are not as complex as the model and sample size in this study. Although it is a scientific risk, it is a decision taken for new findings to emerge. The following hypotheses were developed regarding information management practices in light of all these scientific studies:

**H<sub>1A</sub>**: Information management practices directly and positively affect a firm's innovation performance.

**H<sub>1B</sub>**: Information management practices directly and positively affect a firm's financial and growth performance.

More inclusive hypotheses, which are formed within the framework of the research model and include other variables of the study, are presented in the methodology section.

### *Organizational Intelligence*

The use of the concept of organizational intelligence, which has been described by many researchers, dates back to the 1990s. At the International Economic Conference in Tokyo (1992), Matsuda stated that the complex, interactive, cumulative, and coordinating skills of human and machine intelligence in an organization reveal its organizational intelligence, which is the process of initiating and implementing innovations that are compatible with environmental demands (Kiani et al., 2013). Organizational intelligence means the capacity of an organization to strategically use this information to create information and adapt to the workplace and environment (Tang & Sivaramakrishnan, 2003). Organizational intelligence is efficiently managing and coordinating information and thought in order to meet customer needs. It is the intellectual capacity of the organization to solve organizational problems by unifying its technical and human capacities. The importance of organizational intelligence highlights an organization's ability to increase innovation, information, general knowledge, effective work, and provides organizations with a competitive advantage by converting information into knowledge (Ahmad et al., 2019).

Organizational intelligence is the set of mental abilities required to produce the information needed, which is present in a particular organization and which can be considered as a strategic capacity (Keshavarz et al., 2018). Organizations face economic, technological, social, cultural, and political conditions with a continually changing environment. Surviving under such competitive and complex conditions requires exercising sensitivity toward the environment as well as appropriately responding at the right time (Erfani Khanghahi & Jafari, 2013). Lefter et al. (2008) revealed that organizational intelligence makes it easier for organizations to respond to changes around them. The authors also mentioned various features of the organization such as ensuring

**Table I.** Quantitative Studies on Information Management Practices.

Study	Data	Relevant results
Darroch (2005)	A study that consists of the surveys distributed to CEOs in New Zealand to provide important empirical evidence to support the role of information management in businesses.	* Evidence was found that a company with the information management capability uses resources more efficiently and, therefore, will exhibit a more innovative and better performance.
Gökce (2006)	A study that consists of the survey data applied to industrial businesses in Konya to reveal with which approach the information management process and strategic information management are carried out by businesses.	* It was determined that information technologies are an important factor in obtaining information, and the fitness of the information for the needs is important in the process of classifying and storing the information in the businesses that participated in the study.
Vaccaro et al. (2010)	A study created with questionnaires distributed to Brazilian automotive companies to explain the relationship between information management tools and innovation and firm performance.	* It was determined that the more intensive use of information management tools has a direct positive effect on the new product performance and financial performance.
Mesci (2011)	A study that obtains information from the questionnaires distributed to 321 hotels operating in Turkey in order to determine the effect of the relationship between the information and innovation on the performance of the business.	* It was confirmed that a strong relationship exists among information management, innovation, and business performance.
López-Nicolás and Meroño-Cerdán (2011)	A study formed with the data obtained from the surveys distributed to 310 Spanish firms to shed light on the results of information management strategies on firm innovation and corporate performance.	* It was proved that information management strategies directly and indirectly (with the increase in the innovation capacity) affect innovation and organizational performance.
Wang and Wang (2012)	A study on the relationship between information exchange and firm performance as well as how it affects innovation performance. This study was conducted by distributing surveys to 89 high-tech firms in China.	* Information exchange is directly positively correlated with the performance.
Lai et al. (2014)	A study conducted in the industrial zones in Taiwan to assess the impact of information management in terms of corporate innovation performance.	* Findings were obtained that information exchange positively affects innovation.
Aktürk (2017)	A study that consists of the data collected with the questionnaires distributed to 233 companies in Turkey in order to investigate whether there is a positive relationship between information management practices and strategy formulation skills and business performance.	* It was determined that information management improves the output performance and innovation of firms in industrial clusters.
Davila et al. (2019)	This research is a study conducted by surveying 127 Brazilian firms to investigate the relationships among strategic information management practices, innovation performance, and organizational performance.	* It was determined that industrial clusters have a significant and positive effect on information management.
Susanty et al. (2019)	A study conducted in Indonesia by collecting surveys on how information management practices affect innovation performance.	* A positive relationship was found between the information management practices and performance of businesses. * It was observed that, when information management practices are used together with the strategy formulation skills, their interaction further increases the business performance. * It was revealed that a strong relationship exists among strategic information practices, innovation, and organizational performance.
		* It was concluded that information technology practices and business organizations have a positive and significant correlation with innovation performance.

Source: Compiled by the author.

the collection, process, interpretation, and transfer of the technical and political information required in the decision-making process; establishing the required systems for the learning cycle in organizations; and developing the organization's coping skills with the complexities encountered. Actual research shows that organizations that use their intelligence are busy with learning processes using intuitive information tactics. In addition, performance can be determined and strengthened by harmonizing between organizational intelligence and its environment (Hamad, 2019). Feldman and March revealed that an organization's intelligence features "the ability to provide, analyze, and receive the right information at the right time." In this logic, organizational intelligence is a process that provides strategic information to the organization (Daoudi et al., 2020). Organizational intelligence is a social process theory based on human intelligence. Further, organizational intelligence is defined as an organization's capacity to mobilize available intelligence abilities and centralize such abilities to achieve the organization's mission (Daneshfard et al., 2016). It is an essential issue for developmental and organizational behavioral experts and is the key to empowering subordinate forces in vital activities and processes governing organizational life. Today, with full confidence, it can be argued that identifying and using organizational intelligence can increase an organization's competitiveness, which may distinguish it from other organizations (Rezaei et al., 2018).

Many researchers have tried to develop a theory that explains the cognitive foundations of institutional innovation. The main idea is that intelligence is placed into organizations and operates through both individual agents and institutionalized systems to influence organizational innovation. Organizational innovation is based on individual and organizational intelligence driven by contextual factors. Thus, how companies will innovate more and how to make innovative firms smarter have turned into essential issues (Glynn, 1996). While Bakhshian et al. (2011) define organizational intelligence as an organization's capacity to use its knowledge to strategically adapt to its environment. The authors also state that it consists of measurable values. Likewise, Alamur (2016) emphasized that organizational intelligence can be developed with special arrangements and measures to be taken within the organization.

Increasing organizational intelligence also raises employee morale. As such, members who develop themselves and show greater efforts to fulfill their responsibilities will perform the works expected from them at the desired standards.

### *Hypothesis Development*

Organizational intelligence is a term that has entered the literature, especially in recent years; as such, the relevant literature provides many related theoretical studies in which organizational intelligence was considered as an independent

variable, and various analyses were performed on a firm's performance, productivity, and competitiveness. Some studies do not affect the scope of these analyses, and these studies and their results are summarized in Table 2.

The following hypotheses regarding organizational intelligence were developed within the scope of the literature:

**H<sub>2A</sub>**: Organizational intelligence directly and positively affects the innovation performance of a firm.

**H<sub>2B</sub>**: Organizational intelligence directly and positively affects the financial and growth performance of a firm.

The concept of organizational intelligence and the two sub-dimensions were used as pure independent variables in our study. More inclusive hypotheses created within the framework of the research model including other variables are presented in the methodology part.

### *Innovation, Financial, and Growth Performance*

Organizations that attach importance to innovation and change try to develop new ideas, find new solutions to problems, take risks, and create new opportunities in order to keep up with changes in their environment. Thus, innovation will become a talent factor for firms, creating a competitive advantage against its competitors, and providing dynamism (Hacıbeyoğlu, 2018). According to Prajogo and Ahmed (2006), to address the various aspects of innovation performance comprehensively, there is a need to know a firm's product innovation (generating new ideas, creating a new product or service) and process innovation (changes in how firms produce final products or services, acceptance of an innovation developed in another place, new practices developed internally). The innovation performance of firms is primarily determined by their innovative activities and their interactions with innovation-related environments (Hinloopen, 2003). At the same time, a firm's market orientation, firm performance, new product performance, firm innovation, and competitive factors play an important role in firms' innovation strategy and performance (Erdil et al., 2004).

Many scientists have accepted organizations' innovation capability as one of the main premises that affect an organization's innovation performance. Yusr (2016) emphasized that the development of an organization's capabilities in various fields is an important step to strengthening its innovation performance. The survival of organizations and achieving sustainable superiority are correlated with having an innovative and enterprising organizational culture and structure. Learning organizations can develop their innovative skills and increase their performance and competitive power (Şahin, 2015). Notably, firms with innovative capacity can change quickly and perform better than non-innovative organizations (Chen et al., 2019). In an environment characterized by intense competition, the main step toward organizational

**Table 2.** Quantitative Studies Conducted on Organizational Intelligence.

Study	Data	Relevant results
Lefter et al. (2008)	A study on whether the concept of organizational intelligence exists in companies in Romania.	* It was concluded that the concept of organizational intelligence is a very new concept in Romanian companies and does not make any sense to them.
Kalkan (2008)	It was carried out to prove that there is a positive relationship between the organization's information processing ability and organizational innovation, and between organizational innovation and firm performance. The data were collected with a questionnaire applied to 207 companies in the Marmara Region.	* It was proved that the relationship between the components of organizational intelligence and firm performance is positive. * It was determined that organizational innovativeness is positively correlated with firm performance.
Gürel (2011)	It was tried to explain the impact of organizational learning, transformational leadership, market orientation, and organizational innovation on firm performance using the data collected from the sample that consisted of 316 companies in Turkey.	* It was proved that organizational innovation has a direct and significant impact on firm performance. * There was no direct impact of organizational learning on firm performance.
Chegani (2016)	A survey study conducted on five firms in Iran to investigate the impact of organizational intelligence and organizational innovation on technological innovation.	* It was revealed that the increase in organizational intelligence supports organizational creativity, whereby it increases product and process innovation. Therefore, a positive impact on technological innovation was proven.
Göktaş (2017)	A study on whether there is a relationship between organizational intelligence and its dimensions and information management processes.	* A significant positive relationship was found between organizational intelligence and information management processes.

Source: Compiled by the author.

success is to maximize corporate performance by increasing innovation performance (Gürlek & Çemberci, 2020).

The performance consists of the relationship between results obtained by achieving the most efficient output with the lowest cost (Burak, 2019). The financial performance success of businesses that want to increase and maintain their profitability in the long term brings about positive results such as the increase in the income of employees, higher quality of the products offered to the customer, and having more effective and efficient production functions. Businesses achieve this performance by managing their sources and using them in operational, investment, and financial activities (Aydın, 2019). According to İskenderoğlu (2008), when calculating a business's growth performance, quantitative indicators such as the increase in the number of employees, increase in the sum of employees' payments and wages, increase in the amount of energy used, sales, actives and expenditures, increase in gross profits and investments, and increase in the amount of capital are used. In addition, elements such as the change in the number and structures of shareholders, change in management style, change in the type of production, change in the share of the capital and labor force used in production, and the ability of the business to provide credits are among the qualitative factors used when measuring growth performance.

Performance measurement and analyses have vital importance for business management. Information obtained from customers, production and service performance, activities,

market and competitive comparisons, suppliers, relations with employees, and cost and finance are used for this measurement. Information obtained in the process of performance assessment is turned into data. This data is used to develop the activities of the business, whereby the application stage is started. The business performance is reviewed at the end of the process, and the current business performance is compared with that of its competitors; further, tables and analyses showing the financial and growth performance are prepared and presented to the relevant person (Tarım, 2004). Businesses with high-growth performance are more enterprising and stronger in areas that require competition, as they have more extensive sources and market share. They can also operate in more profitable areas that require high capital (Bayyurt, 2007). With the development of global competition, Örs et al. (2015) noted the importance of calculating all the performances of businesses regularly and transferring them to tables. Therefore, factors related to financial and growth performance, which are known for their susceptibility to the innovation performance of firms and which are necessary to perceive it correctly, were included in this study.

### *Hypothesis Development*

Reviewing the literature regarding innovation performance determined that many empirical studies were conducted in the recent past. Innovation performance was perceived as a direct result and used as a dependent variable in some

studies; in other studies, innovation performance was used as an accelerating variable in research where financial and growth performance was a dependent variable. These studies and their results are summarized in Table 3:

The following hypothesis was developed in the light of all these scientific studies:

**H<sub>3</sub>:** Innovation performance has a direct and positive effect on the growth and financial performance of a firm.

The reason for developing only one hypothesis in this section is that innovation performance will only affect a firm's financial and growth performance in the case it is addressed as an independent variable. Within the framework of the structural equation model, all these relationships were checked and interpreted through the path model.

## Methodology and Implementation

All the methods and applications used throughout the study, the creation of the research scales, sample selection and data collection, validity and reliability analyses of the scale are included in this section. In the last section, the topics of the research model are examined as the test of the research model. Smart PLS software is used for statistical analyzes of study. Researches prefer Partial Least Square (PLS) structural equation model method when the research objective is to better understand increasing complexity by exploring theoretical extensions of established theories (exploratory research for theory development) or the path model includes one or more formatively measured constructs (Hair et al., 2019). Due to data distribution issues are a concern, this method is considered to give much more effective results.

### Research Model, Research Question, and Hypotheses

The aim of this study is to investigate whether information management practices and organizational intelligence have an impact on the innovation performance of the firm by applying empirical fieldwork in the technology and informatics firms under investigation. Figure 1 shows the research model:

Within the scope of the study, all hypotheses were tested with the structural equation model, which is a new generation statistical method, and all findings were interpreted in detail. The main purpose of choosing the structural equation model is to ensure that cause-and-effect relationships are revealed since it includes regression coefficients and to allow the symbolization of the research variables as a model.

### Creation of the Research Scale

In the study, as a result of the examinations carried out in the literature for the related subjects, it was found out that there are many studies covering strategic orientations. In the

selection of the scales used in this study, attention was paid to including scales which can be valid for national culture and which are thought to give the best results. The scales related to the factors within the scope of the study were combined in the questionnaire form comprehensively. The questions used in the research scale were formed or adapted from the following sources: Information Management Practices; Gökce (2006), Organizational Intelligence; Wilensky (2015) and Albrecht (2003), Innovation Performance; Eren (2010), Financial and Growth Performance; Antoncic and Hisrich (2001) and Zahra et al. (2002). The study was mainly conducted on technology and information technology companies operating in the Marmara Region of Turkey, which includes more than 1,000 companies and 32,000 information technology (IT) employees. Industry, trade, tourism, and agriculture have developed in the Marmara Region. Although the most developed industry in the region is in the cities of Istanbul-Bursa-Kocaeli, there are also extensive industrial activities in other parts of the region. Since it is undoubtedly the essential region of the country, it has been preferred within the scope of the research.

### Sample and Data Collection

The study was mainly conducted on technology and information technology companies operating in the Marmara Region of Turkey, which includes more than 1,000 companies and 32,000 information technology (IT) employees. The reason for choosing especially technology-intensive companies is that the scales used for the survey are the organization types that can accurately measure the knowledge, organizational intelligence, and innovation performance of institutions. The collection process of the surveys, which included the data of 495 managers in total covered the period from the last months of 2018 to the beginning of 2019. It is tried to collect the surveys in a period as short as possible. Especially in social sciences, when the survey collection process is kept long, the survey results may be affected due to the changes in economic, political, and social events. The average age of the respondents was found to be 35.2. In addition, the average years of experience of the employees in the company were determined as 6.4. This ratio supports the classification of employees as people who know enough about the structure and culture of the company. One of the most striking findings of the study involving 233 women is that women in the IT sector are now taking part in critical positions as intensely as men. 30.9% (153 people) of the participants in the study have postgraduate and doctorate degrees, 47.9% (237 people) have university graduates.

### Validity and Reliability Analyses of the Research Scale

The success of the scales used in the studies in estimating the attitudes and behaviors of individuals mainly depends on the

**Table 3. Quantitative Studies on Innovation, Growth and Financial Performance.**

Study	Data	Relevant results
Thornhill (2006)	A study conducted on 845 Canadian manufacturing firms to determine the level of relationship between innovation and firm performance by integrating the context of sectoral competition and firm-level information structures.	<ul style="list-style-type: none"> <li>* The positive relationship between firm-level innovation and industry-level growth was proven. The presence of the positive correlation between innovation and firm performance was confirmed.</li> <li>* The results show that the quality of an innovation depends on revenue growth as well as being a function of the level of information assets in a firm.</li> </ul>
Dunk (2011)	A study applied to 199 production firm regional managers in Australia. The extent of the positive impact of product innovation on financial performance and the way the budget of organizations is used were investigated.	<ul style="list-style-type: none"> <li>* It was concluded that there is a positive relationship between product innovation and financial performance.</li> <li>* If the budgets of firms are mainly used as a planning mechanism, it was found that this situation increases firm performance.</li> </ul>
Colombelli et al. (2013)	The aim of this study is to examine whether firms that engage in innovation have higher growth rates than firms that do not.	<ul style="list-style-type: none"> <li>* Innovative firms (whatever type of innovation is) generate more growth than noninnovative firms.</li> <li>* The effects of innovation on growth are stronger on firms with the highest growth rates.</li> </ul>
Şahin (2015)	An empirical study applied to large-scale hospitality businesses operating in Mugla province. It was conducted to determine the contribution of talent management practices to innovation performance in hospitality businesses.	<ul style="list-style-type: none"> <li>* It was concluded that businesses operating in the tourism industry are good in terms of innovation and that these businesses have difficulty in allocating or finding the necessary source to develop innovation performances.</li> <li>* A positive correlation was found between talent management and innovation performance.</li> </ul>
Doğan (2015)	Factors affecting the survival, growth performances, and possibility to make innovations of businesses operating in the production industry in Turkey were investigated.	<ul style="list-style-type: none"> <li>* The possibility of innovation and R&amp;D of businesses that carry out export activities, make investments, and differentiate by opening branches was determined to be higher than those that do not perform such activities.</li> <li>* It was observed that firms that apply R&amp;D cooperations are more innovative and achieve higher firm performance.</li> <li>* There is a significant relationship between the possibility of businesses to survive and grow and their innovation and R&amp;D activities.</li> </ul>
Abdukhoshimov (2016)	The study was conducted to determine the contribution of the computer-aided information management portal used by Türk Telekom Antalya Regional Directorate to the information management process, innovation, and business performance. It consists of the findings obtained from the questionnaires and interview questions directed to firm managers and staff working in different positions and comments on these findings.	<ul style="list-style-type: none"> <li>* It was observed a firms with a high rate of profitability have a high growth and survival performance.</li> <li>* It was observed that the factors with the highest average in the innovation performance of businesses are their level of using new technologies, new machines, and new methods.</li> <li>* It was revealed that businesses in the telecommunication sector focused more on innovation and service quality, and innovation performance has a positive effect on the performance of the business.</li> <li>* The decrease in customer satisfaction reduced business performance.</li> <li>* It was revealed that the stored information and newly acquired information strongly affect business performance.</li> <li>* It was revealed that product and process innovation has a positive and significant effect on business performance and organizational innovation has an insignificant effect on business performance.</li> </ul>
Hacıbeyoğlu (2018)	An empirical study applied to software companies operating in Istanbul. It was aimed to determine the effect of the innovation approach and organizational learning level of businesses on business performance.	<ul style="list-style-type: none"> <li>* Findings showing that strategy innovation has a direct positive effect on the financial performance of the business were obtained.</li> <li>* It was proved that the process, market, and product innovation does not have an effect on the financial performance level.</li> </ul>
Burrus et al. (2018)	This study was conducted to frame the relationship between the innovation activities in a particular region and the performance of publicly held firms. The study was carried out with the data taken from the American Patent Office at the district level that belong to the period between 2001 and 2014.	<ul style="list-style-type: none"> <li>* It was determined that there is a positive correlation between the creative activities in the district and the income and profit growth of a firm.</li> <li>* The results also show a positive correlation among technical creativity and process improvement and a firm's net revenue growth.</li> </ul>
Grillitsch et al. (2019)	This study is based on the survey results distributed to Swedish automotive companies to determine the impact of the knowledge accumulation on innovation performance and financial performance.	<ul style="list-style-type: none"> <li>* It proves that there is a strong relationship between databases and their combinations and a high growth rate.</li> <li>* It was revealed that firms that are under strong pressure to achieve new job opportunities and have a low growth rate also strongly benefit from databases.</li> <li>* It was confirmed that firms that produce unique products with a high consumer value show higher growth performance.</li> </ul>
Hassan and Raziq (2019)	A study that aims to prove the relationship between information management practices and innovation through surveys in small and medium-sized businesses operating in the service sector in Balochistan, Quetta.	<ul style="list-style-type: none"> <li>* It was confirmed that there is a significant positive correlation between information management practices (information acquisition, information dissemination, and sensitivity to information) and innovation.</li> </ul>

Source: Compiled by the author.



**Table 4.** Reliability Analysis Results.

Name of the variable	Number of questions	Cronbach's alpha
Organizational intelligence	7	.764
Information management practices	38	.935
Innovation performance	6	.896
Financial and growth performance	11	.885
All scales	62	.953

validity and reliability of the scores obtained from the test. The intended purposes of these analyses are defined as follows: Validity: A term that expresses the extent to which the test correctly measures the feature to be measured (Büyükoztürk, 2018). Reliability: One of the properties that the scale must possess in a study. It is an indicator of the stability of the measured (Ercan & Kan, 2004).

When the reliability values (Table 4) are examined, it is observed that the scales have Cronbach's alpha load between .764 and .935. Considering that values of 0.700 and above are generally accepted in social sciences, the data set prepared for the study is quite reliable. Furthermore, a general reliability analysis of 62 questions was examined, and the result was found to be .953. The fact that the sub-factors of general reliability have a higher value than their arithmetic mean can be interpreted as the fact that the model is correctly designed.

Factor analysis is a type of multivariate analysis that ensures a more meaningful and summarized presentation of the data based on the relationships between a group of variables. It also examines relationships between variables and ensures that they are turned into fewer variables. Its purpose is to obtain information from large amounts of data in a summary and new form, with the minimal loss of information. Other purposes include defining the structure of the data, summarizing them, managing their numbers, and reducing them to a reasonable number (Nakip, 2003). First, second-order factor analysis was conducted on information management practices. The second-order confirmatory factor analysis is a statistical method used by the researcher to verify that the theoretical structure is loaded on certain underlying substructures or components in a study. For example, the theory shows that the quality of the service structure consists of five basic substructures and that each substructure is measured using a certain number of items by a survey. The researcher may wish to estimate the impact of this main structure on the substructures.

As can be seen in the factor analysis table, the variables were taken under review in the columns to which they were assigned. Correlation analysis was performed following this analysis. Correlation analysis is a technique used in the science of statistics to test the existence and direction of the relationship between two variables. Three types of correlation coefficients can be used in analysis programs. Of these, (i) the Pearson coefficient is mostly used for continuous data, (ii) and

(iii) Kendall's tau-b and Spearman's correlation coefficients are used for ranked data (Padem et al., 2012). Correlation is a measure of the covariance of variables; in other words, the relationship between dependent and independent variables. In correlation, one of the variables does not necessarily have to be dependent and the other independent. The correlation can be calculated in this way (Efe et al., 2000). The correlation table of the study (Table 5) is as follows:

The analysis results obtained when interpreting the correlation tables are shown symmetrically on the current table. For this reason, only the upper right cross-section of the table is filled with data. The analysis is a table showing the interrelationships and the direction of the relationship and does not show a cause and effect relationship. Firstly, a moderate and positive relationship between the Innovation Performance and Mental Model Development sub-dimensions draws attention (0.618). Similarly, it is observed that the Mental Model Development and Information Management Practices also have a high correlation value (.652). All variables have low correlation with Financial and Growth Performance (in the range between .223 and .390). It was observed that the sub-dimension of Innovation Performance is the variable with the highest correlation value in the correlation analysis. At last, the average variance extracted is defined as (Fornell & Larcker, 1981): where values greater than .5 are considered adequate. For composite reliabilities, according to Hair et al. (2014) the minimum composite reliability value in the PLS-SEM analysis should exceed .7 value. Individual item reliabilities will be lower than the composite, but it is not possible to suggest even loose rules-of-thumb as to adequate sizes. Some of sub-factors seems below this level. This is acceptable because the variance average of all variables is high. Dijkstra's rho\_A which is described in many studies as a determinant of better approximation of true reliabilities of the research (Adam, 2018; Henseler et al., 2014).

### Structural Equation Model

The structural equation model, which is a comprehensive statistical technique, is used to test the relationships between observed and unobserved (latent) variables. This technique is used to solve problems that arise when formulating theoretical structures. It is a systematic tool mostly used in psychology, sociology, marketing, and educational sciences to evaluate the relationships between variables and to test theoretical models. This model is also used to estimate unknown parameters in the linear structure equation set (Erkmen et al., 2020; Yılmaz, 2004). Table 6 shows the discriminant validity, model compliance, and VIF values. The research model of the study, which consists of three independent variables in total, one of them being a mediator variables, and two dependent variables, is illustrated in Figure 2.

The two most prominent features of the structural equation model are that it is entirely theory-based and accepts the existence of a causal structure between a set of implicit

**Table 5.** Correlation and Variance Table.

	PIA	IMP	FGP	IP	MMD	rho_A	Composite reliability
PIA	1.000	0.418	0.223	0.374	0.460	.291	.735
IMP		1.000	0.383	0.728	0.652	.940	.939
FGP			1.000	0.390	0.364	.893	.909
IP				1.000	0.618	.934	.925
MMD					1.000	.881	.904

PIA=perceived information availability; MMD=mental model development; IMP=information management practices; IP=innovation performance; FGP=financial and growth performance.

**Table 6.** Discriminant Validity, Model Compliance, and VIF Values.

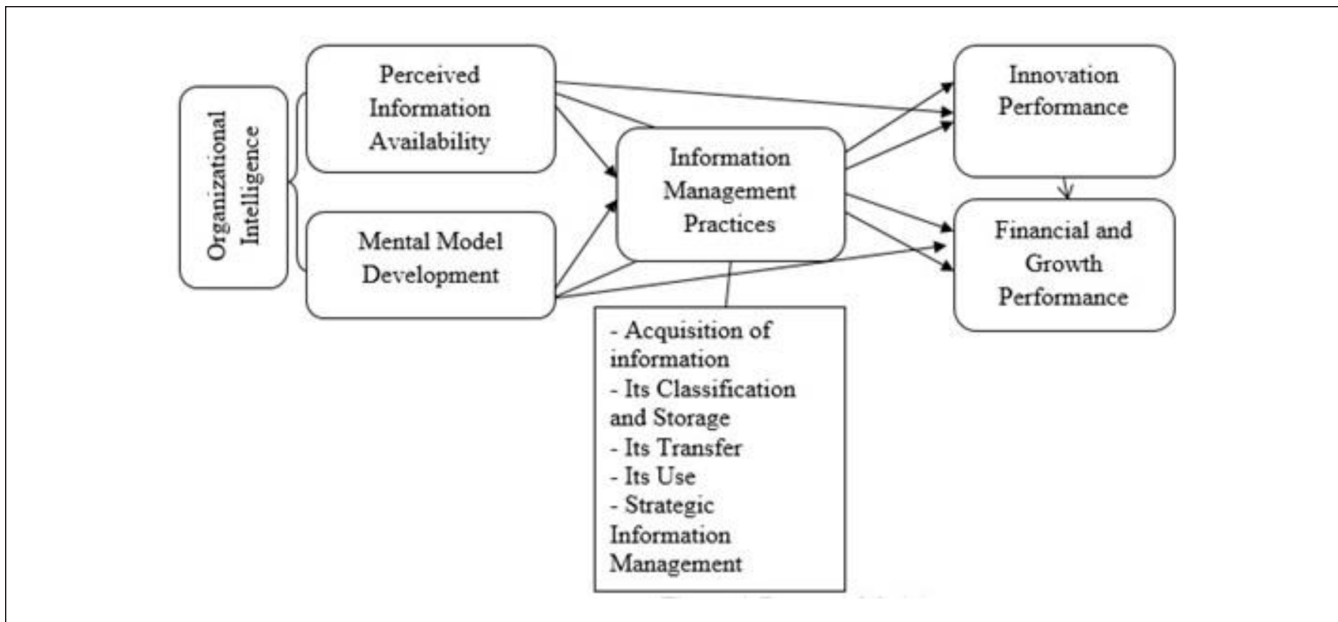
	PIA	IMP	FGP	IP	MMD
PIA	0.763				
IMP	0.418	0.607			
FGP	0.223	0.383	0.690		
IP	0.374	0.728	0.390	0.824	
MMD	0.460	0.652	0.364	0.618	0.839

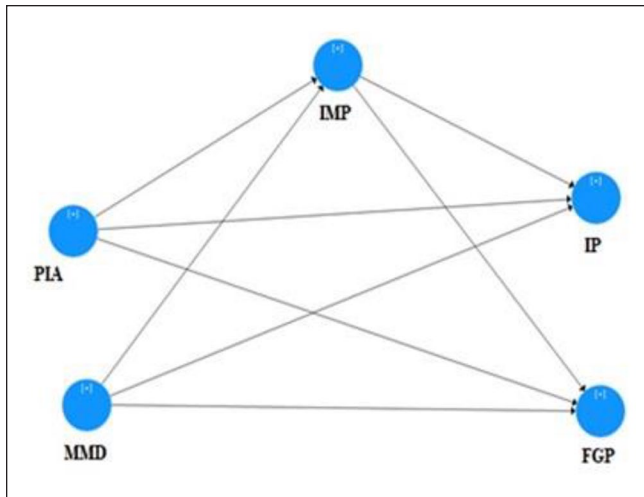
	PIA	IMP	FGP	IP	MMD
PIA		1.269	1.309	1.309	
IMP			1.796	1.796	
FGP					
IP					
MMD		1.269	1.880	1.880	

Model compliance values	Realized model	Estimated model
SRMR	0.071	0.071
Chi-Square	5.004584	5.005874
NFI	0.769	0.769



**Figure 1.** Research model with all sub factors.



**Figure 2.** Research model.

variables. The most widely used method in this model is the two-stage method. At the first stage, the measurement model is tested first, and the measurements of the structures in the model are checked to see if they measure the related structures correctly. At the second stage, structural models are examined. The issue to be considered in the implementation of this model is that the model created has a solid theoretical background (Dursun & Kocagöz, 2010). Structural equation modeling is a multivariate statistical analysis technique used to analyze structural relationships. This technique is a combination of factor analysis and multiple regression analysis and is used to analyze the structural relationship between measured variables and latent structures. The researcher prefers this method because it predicts multiple dependence and interdependence in a single analysis. In this analysis, two types of variables, endogenous and exogenous variables, were used. Endogenous variables are equivalents of dependent variables and equal to independent variables. SEM can be considered as a series of relationships that ensure the consistency of the actual events and their comprehensive explanations. There are two types of models. The first one of them, the measurement model represents the theory that indicates how the measured variables come together to represent the theory. The other one is the structural model. The structural model represents the theory that shows how structures are related to other structures. One of the essential elements regarding the structural equation model is its multivariate normal distribution. The maximum likelihood method is used and assumed to ensure this. Small changes in multivariate normality can make a big difference in the chi-square test.

Similarly, it is assumed that there is a linear relationship between the internal and external variables. The data in the study should not contain outliers. Outliers affect the

significance of the model. There must be a cause-effect relationship between endogenous and exogenous variables, and a cause should arise before the event. The observed covariance should be correct. Equations must be higher than the estimated parameters, or the models must be over-defined or fully defined. Defined models are not taken into consideration. The sample size is another critical issue. Most researchers prefer 200 to 400 sample sizes with 10 to 15 indicators. As a general rule, it is 10 to 20 times greater than the variables in most cases. According to another calculation, it can take the form of sample determination over the research population.

The results of this empirical research provide the evidence of the discriminant validity of all variables scores. When the model compliance indices are examined, it is observed that the SRMS value is below the defined threshold value (0.080) with 0.071, and above the base value (0.050). The Chi-square coefficient value was 5.004584, and the NFI value was determined to be 0.769. The VIF values and discriminant validity coefficients are summarized in the table presented above. The standardized regression coefficients, shown in Table 7, also may provide the evidence of convergent validity.

When Table 7 is analyzed in detail, the first thing that draws attention is that PIA does not have any direct effect on FGP and AMB does not have any direct effect on IP. Upon examining the Beta values, the highest effects in the analysis are the direct and positive effect of MMD on IMP with .583, and the direct and positive effect of IMP on IP with the Beta coefficient of .560. When the effects on IMP are examined, a determination coefficient of 44.1% was determined in the model. Similarly, 56.4% of the changes in IP are explained by the model. Although the determinative coefficient of FGP is relatively lower than that of IMP and IP, 16.5% is quite a high explanatory coefficient for research within the framework of social sciences.

A second analysis that included each variation was performed to observe the indirect relationships between the variables in the study, and indirect effects were examined. The results found are presented in Table 8 with their Beta coefficients.

As can also be seen in the table, Mental Model Development has an indirect and strong effect on Innovation Performance with a Beta coefficient value of .327. Again, similarly, the Mental Model Development Factor indirectly affects Financial and Growth Performance positively with a Beta coefficient of .144. *p* Values are estimated by Bootstrap method. It was thought that all these analyses would be beneficial in terms of shedding light to academicians and managers in future studies, if not within the scope of the hypotheses.

As can be seen in Figure 3, the Beta coefficients and the directions of the relationship between all the variables in the study are shown. The highest impact is the direct and

**Table 7.** Basic Model Path Coefficients and R<sup>2</sup> Values.

	Original sample (β)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	p-Values
PIA → IMP	.150	0.152	0.040	3.766	.000**
PIA → FGP	.034	0.035	0.046	0.728	.467
PIA → IP	.029	0.032	0.041	0.727	.467
IMP → FGP	.246	0.253	0.061	4.056	.000**
IMP → IP	.560	0.567	0.059	9.555	.000**
IP → FGP	.210	0.211	0.082	2.575	.010**
MMD → IMP	.583	0.582	0.041	14.356	.000**
MMD → FGP	.188	0.188	0.069	2.748	.006**
MMD → IP	.239	0.231	0.065	3.661	.000**

	R <sup>2</sup>	Corrected R <sup>2</sup>
IMP	0.443	0.441
FGP	0.170	0.165
IP	0.567	0.564

PIA = perceived information availability  
 IMP = information management practices  
 MMD = mental model development  
 FGP = financial and growth performance  
 IP = innovation performance

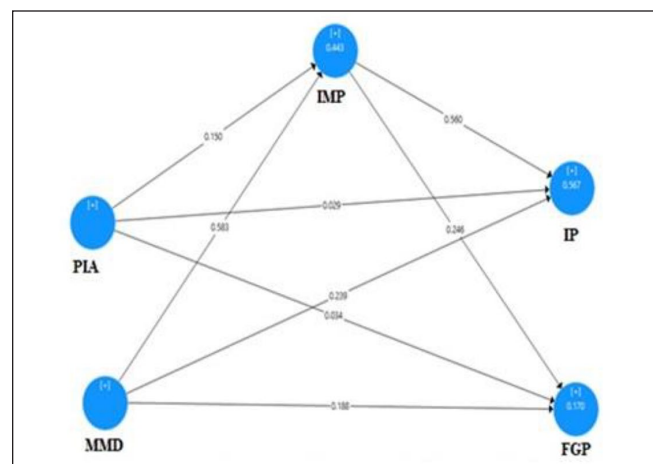
\*\*p < .01.

**Table 8.** Indirect Effects.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T statistics ( O/STDEV )	p-Values
PIA → IMP					
PIA → FGP	0.037	0.039	0.014	2.616	.009**
PIA → IP	0.084	0.087	0.026	3.266	.001**
IMP → FGP					
IMP → IP					
MMD → IMP					
MMD → FGP	0.144	0.148	0.039	3.666	.000**
MMD → IP	0.327	0.330	0.039	8.398	.000**

PIA = perceived information availability; IMP = information management practices; MMD = mental model development.  
 FGP: Financial and Growth Performance IP: Innovation Performance.  
 \*\*p < .01.

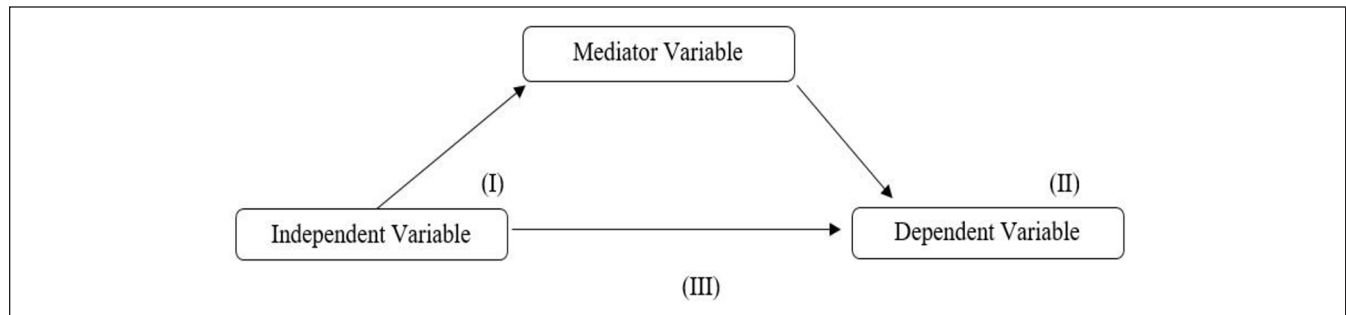
positive effect of Information Management Practices on Innovation Performance (β = .560) and the direct and positive effect of Mental Model Development on Information Management Practices (β = .583). Information Management Practices have a direct effect on Financial and Growth Performance (β = .560). Innovation Performance has a medium-level effect on Financial and Growth Performance (β = .210). Upon investigating the determination (decisiveness) coefficients, it is observed that all variables explain the total change in Information Management Practices at a rate of 44.1%. In other words, the independent variables of the study are responsible for 44.1 units in every 100 units of change in IMP. Similarly, 16.5% of the changes in Financial and Growth Performance, and 56.4% of the changes in Innovation Performance are explained by the independent variables of the study. As an example on Innovation Performance, 56.4% of all positive changes at



**Figure 3.** Coefficients of interaction between variables and R<sup>2</sup> values.

**Table 9.** Hypothesis Acceptance Table.

Hypothesis	Status
<b>H<sub>1A</sub></b> : Information management practices directly and positively affect the innovation performance of the firm.	Supported
<b>H<sub>1B</sub></b> : Information management practices directly and positively affect the firm's financial and growth performance.	Supported
<b>H<sub>2A</sub></b> : Organizational intelligence directly and positively affects the firm's innovation performance.	Not Supported
<b>H<sub>2B</sub></b> : Organizational intelligence directly and positively affects the firm's financial and growth performance.	Supported
<b>H<sub>3</sub></b> : Innovation performance has a direct and positive effect on the firm's growth and financial performance.	Supported
<b>H<sub>4</sub></b> : Organizational intelligence has an indirect and positive effect on the firm's innovation performance through information management practices.	Not Supported



**Figure 4.** Mediator variable relationships (Baron & Kenny, 1986).

this performance level are explained by the sub-dimensions of Organizational Intelligence and IMP.

As can be seen in Table 9, there is no rejected hypothesis among the hypotheses developed on the basis of the literature within the scope of the study. However, the fact that organizational intelligence directly affects the firm's innovation performance was partially supported as only one sub-dimension (Mental Model Development  $\beta = .239$ ) of H2A hypothesis was found to be significant. The indirect and positive effect of organizational intelligence on the firm's innovation performance through information management practices is explained in detail in the next section, and the calculations made on the model developed by Baron and Kenny are presented comprehensively.

**Additional Findings: Mediator Variable Effect**

Baron and Kenny's (1986) mediator, variable analysis model, was used when determining the mediator role of information management practices and sub-dimensions among the independent variables in the study. According to the authors, in order to understand the effect of a mediator variable, the existence of relationships I, II, and III in Figure 4, and the decrease or complete disappearance of relationship III are required after adding the mediator variable to the model, that is, it should be shaded. In other words, if the relationship between the independent variable and the dependent variable is overshadowed by another independent variable added to the model, it is possible to talk about the effect of the mediator variable. In Figure 4, the relationships of the mediator variable are symbolized:

Baron and Kenny say that the following conditions should be present in order to explain the role of the mediator variable in a model: (i) The change in an independent variable should lead to change in the mediator variable. (ii) The change in the mediator variable should cause a change in the dependent variable, and (iii) when both the mediator and independent variables are included in the analysis, the effect of the independent variable on the dependent variable must either be reduced or eliminated. The elimination of this effect shows that there is a single stable mediator variable, and the fact that it is not zero shows that there are other mediator variables (Yürür & Keser, 2010). Two-step construction procedure was used to address the hypotheses about the moderating effects. The PLS approach enables the explicit estimation of the standardized latent variable scores subsequent to saving the obtained outputs.

When all the analyses related to the mediator variable effect in Table 10 were examined, no mediator variable relationship was found between Perceived Information Availability and Financial and Growth Performance ( $\beta = .072$ ;  $p = .139$ ). However, Information Management Practices gained the full mediator role in the relationship between the Perceived Information Availability and Innovation Performance. There is a significant effect at the level of  $\beta = .112$ ,  $p = .017$  between the Perceived Information Availability and Innovation Performance. A solid relationship at the level of  $\beta = .732$ ,  $p = .000$  was observed between IMP and Innovation Performance. Nevertheless, the effect between PIA and IP completely disappears when the IMP factor is taken under review at the same time ( $\beta = .029$ ,  $p = .467$ ). This situation shows the existence of the full

**Table 10.** Analyses of the Effect of the Mediator Variable.

	First step		Second step		Third step (the whole model)	
	Original Sample ( $\beta$ )	<i>p</i> -Values	Original sample (O)	<i>p</i> -Values	Original sample (O)	<i>p</i> -Values
PIA → IMP	—	—	—	—	0.150	.000**
PIA → FGP	.072	.139	—	—	0.034	.467
PIA → IP	.112	.017*	—	—	0.029	.467
IMP → FGP	—	—	0.389	.000**	0.246	.000**
IMP → IP	—	—	0.732	.000**	0.560	.00**
MMD → IMP	—	—	—	—	0.583	.000**
MMD → FGP	.333	.000**	—	—	0.188	.006**
MMD → IP	.566	.000**	—	—	0.239	.000**
R <sup>2</sup>	FGP	.138	FGP	.151	FGP	.170
	IP	.391	IP	.536	IP	.567

PIA=perceived information availability; IMP=information management practices; MMD=mental model development; FGP=financial and growth performance; IP=innovation performance.

\* $p < .05$ . \*\* $p < .01$ .

mediator effect, according to Baron and Kenny's model. The partial mediator effect of IMP is observed in the relationship between MMD and FGP, and MMD and IP. The reason for this is that when the IMP variable is included in the analysis at the same time as other independent variables, the strong values that the independent variables initially take weaken and take a low value. This is an indication of the partial mediator effect.

## Conclusions

Information management practices will help to improve innovation through broader and unlimited cooperation, obtain clear and explicit information, access information on time, reduce technical information loss, and accelerate productivity with built-in training and increased customer satisfaction by providing valuable insights. Increasing the quality and cooperation skills by standardizing the working methods and enabling interviews with leading experts is another benefit of employing these practices.

Information management prevents employees from continually reinventing the wheel in a sense. It provides a basis for measuring the progress, reduces the burden on experts, embodies visual thinking, and effectively manages a large amount of information to help employees serve their customers better and faster. Protecting a firm's intellectual capital, focusing on people, which are the most critical asset of the company, and selecting the most appropriate information-sharing strategy for the human capital and creating the company culture are among the essential benefits of information management practices. It is also crucial, especially for senior managers, to bring people closer to management by creating common sharing in the culture.

It is vital that each organization, whether small or large, produces innovation for itself, for its country, and even for the future of the world and takes these innovations to a sustainable point. Organizations typically depend on their innovation

abilities to survive and gain a competitive advantage. The most effective way to produce innovation is to evaluate the information it has acquired, improve its relations with organizational intelligence, and invest in its desired future position. It is a fact that businesses that continuously innovate and effectively commercialize these innovations will succeed in profitability, efficiency, and sustainable growth. For this reason, it will be beneficial for businesses to develop their technological product and process innovations in order to improve their performance. Furthermore, information production is now overshadowing traditional production factors. Businesses that produce, use, and benefit from information typically achieve a sustainable competitive advantage through growth and earning income above the market average.

Innovation provides creative information that enables business executives to examine the market from different perspectives to stay ahead of the competition. Innovation is a critical skill necessary for success; it can help solve problems, make a profit, increase market share, and outdo the competitors. The main practical benefits of innovation include improved productivity, reduced costs, increased competitiveness, improved brand recognition and value, new partnerships and relationships, increased turnover, and profitability.

The results of the study are compatible with those of Darroch (2005), Gökce (2006), and Wang and Wang (2012), who investigated the relationship between information management and innovation performance. As a result of this study, which investigates the effect of employee sensitivity in technology and information technology firms between information management practices and their sub-dimensions on innovation performance and financial and growth performance, a significant relationship was determined to exist among information management practices and innovation performance and financial and growth performance.

It was also determined that information is obtained from other businesses operating in the same sector and from

R&D and other units and internal resources within businesses. Further, it was revealed that the information obtained is classified and stored in accordance with the needs and that employees obtain necessary information in the shortest possible time. It was concluded that employees share information using information systems, for example, group work, intranet, and electronic bulletin boards, and that groups do not hesitate to share the information they obtain at all; furthermore, they are rewarded for adopting such behaviors. It was proved that businesses that frequently relocate, improve, and revise their existing products and services in the market often respond to changes in their customers' demands for products and services and complaints from their employees immediately. For these businesses, strategic information is an input that generates added value; as such, competition between businesses becomes focused on information rather than other sources. Businesses benefit from information effectively in the strategic management process. One of the main points in a resource-based theory is that a business's resources are the elements that provide the most significant advantage in creating surplus value.

Findings similar to those by Kalkan (2008), Gürel (2011), and Chegani (2016), who examined the relationship between organizational intelligence and firm performance and innovation performance, were obtained in this study. It was determined that the perceived information availability, which is one of the sub-dimensions of organizational intelligence, does not have a strong effect on innovation performance and financial and growth performance; further, it is not supported with all its sub-dimensions. The provision of previously unreachable information, the timely acquisition of information, and the use of a single source for relevant, frequently used information that makes up the perceived information availability significantly affects information management practices. Likewise, a significant and direct relationship was determined between businesses with a developed mental model, which can clearly perceive events, understand the sector, and have a developed understanding of their information management practices. It was observed that businesses that closely monitor significant developments and understand the problems and opportunities they face generally seek new and improved methods to accomplish tasks. It was also determined that these businesses strive to invest in the latest technologies while spending sufficiently for developing new products and services. Another critical issue is that businesses with a developed mental model have a higher successful average net profitability compared with their equity, average net profit before tax, net revenue obtained with necessary activities, and the financial success of new products. Note that the results of this study are close to those in Thornhill (2006), Doğan (2015), and Hacıbeyoğlu (2018), which also investigated innovation performance.

## Limitations and Future Research

The number of studies on organizational intelligence and its elements, to our best knowledge, is limited. Moreover, the number of surveys collected in this study limits its generalizability. Thus, the small number of studies examining information management practices, organizational intelligence, and innovation and financial performance in the literature increase the importance of this study. Therefore, it is hoped that this study will contribute to the literature. It is also hoped that practitioners will invest in information management practices that directly and positively affect innovation performance and financial and growth performance. This study is also intended to increase the availability of organizational intelligence and its elements to develop innovative activities. In addition, firms' use of whole information management application processes for obtaining information demonstrates a special effort to obtain information and design mental models for proactive solutions; in short, this attaches importance to organizational intelligence, which indirectly affects a firm's innovation and growth. In other words, management will consider any tactic that enables intelligent organizations to classify information containing added value and ensure its use as an indispensable requirement for success.

The relevant questionnaire can be used in prospective studies and further developed using larger samples. Based on the findings obtained from this study, similar studies can be carried out in public and foundation universities. Tools for establishing, classifying, storing, using, and evaluating information production and management systems and using these tools are critical. Business managers can organize and implement in-company training programs to enable organizational functioning. New perceptions of how corporate and individual expectations may differ through organizational intelligence in businesses can be developed. Furthermore, academicians can contribute to the literature by testing the applicability of the scale related to the development of organizational intelligence in different sectors.

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