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Customer Orientation, Innovation and the Mediating Role of Crowdsourcing in Organizational Performance

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Abstract

This study aims to explore the relationship between customer orientation, innovative and organizational performance as well as to ascertain crowdsourcing's mediating role in augmenting innovative performance in the Turkish Defense and Aerospace Industry. A survey was distributed to 54 C-level executives who are members of Turkish Defense and Aerospace Manufacturers Association (SaSAD). First, a regression analysis was used to predict the impact of customer orientation on innovative and organizational performance. Then, a hierarchical regression analysis was performed to assess if crowdsourcing has a positive impact on enhancing innovative performance. While customer orientation has a somewhat moderate impact on organizational performance, it enhances organizations' innovative performance to a great extent. Furthermore, while innovative performance does not have an immediate positive impact on organizational performance in the short-term, crowdsourcing significantly helps organizations to augment their innovative performance. Whereas extant studies of strategic orientation have focused mainly on the orientation–performance relationship, very few studies provided quantitative evidence regarding the exclusive impact of customer orientation on performance. More importantly, this study aims to explore the mediating role of crowdsourcing between customer orientation and innovative performance in the Turkish defence and aerospace industry, which has a completely peculiar structure.

Keywords: Customer orientation; crowdsourcing; innovative performance; organizational performance; domain-specific industries.

Introduction

Customer orientation is considered the focal point of the marketing concept (Bell & Emory, 1971). As per Vargo & Lusch (2008), customer orientation is deeply rooted in the foundational premises of service-dominant logic. For Slater & Narver (1994), customer orientation is an indispensable dimension of market orientation and it is also regarded as the hearth of market orientation. Though the extant literature has largely focused on the broader concept of market orientation – performance relationship (Narver & Stanley, 1990; Slater & Narver,

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1994; Baker & Sinkula, 1999; Kirca et al., 2005), very few studies provided quantitative evidence regarding the exclusive impact of customer orientation on performance. The study by Brockman et al. (2012) probably offers one of the most comprehensive empirical analysis of customer orientation – performance relationship among small firms. Nevertheless, empirical research in different settings and in larger firms is still missing.

Over the last few decades, the concept of customer orientation in marketing has transformed dramatically. Today, the fundamental construct in marketing is interaction rather than the exchange (Grönroos, 2008). In other words, customer orientation has evolved from a user-centric approach to a user-driven approach, where customers are heeded as co-creators of value (Leminen et al., 2014). In connection with the changing role of customers, innovation activities are also more concerned with the firm's interaction with other actors, notably customers (Howells & Tether, 2004). Pertaining to customers' impact on innovation, a number of researchers (Lilien et al., 2002; Nishikawa et al., 2013) provided evidence that a firm might benefit from consumers in new product development efforts. On account of the fact that customer orientation mostly stands for interaction today, it is closely coupled with crowdsourcing.

It is hoped that this research will contribute to a deeper understanding of customer orientation – performance link as well as the mediating role of crowdsourcing on performance by providing empirical evidence in an utterly new setting, which is the Turkish defence and aerospace industry. First of all, the defence and aerospace industry carries strategic importance on the grounds that it has a huge potential in triggering the advancement of nascent technologies and converting them into civilian improvements (Chesbrough, 2003, p.26). For example, with the launch of Sputnik by the Soviet Union in 1957, the United States invested in the defence industry and scientific research to meet the Soviet challenge and these investments planted the seeds for future innovation, such as memory-foam mattresses, Bluetooth headphones, programmable ovens, vacuums, and ski apparel (Spadoni, 2019; Markovich & Chatzky, 2019).

Secondly, the Turkish defence industry exhibits a hybrid structure as manufacturing and services are linked together. The defence industry incorporates not only the sales of tangible goods, such as land, naval, aerospace platforms, communication and electronic systems and weapon systems but also the sales of intangible goods, such as training and consulting. Training and consultancy include various services, such as project technical consulting services, project assurance services, feasibility services, R&D and technology

management services, industry coordination services, and IT services (Presidency of Defence Industries, 2019). In the present climate, there is a shift towards an integration of manufacturing and service functions within production processes and within products. Manufacturing and service functions have become increasingly difficult to separate. Thus, a concept of "manu-service business model" was even suggested by Bryson & Daniels (2010).

The purpose of this study is to ascertain (1) customer orientation's effect in increasing innovative as well as financial performance, (2) crowdsourcing's mediating role in augmenting innovative performance and (3) innovative performance's impact in enhancing financial performance in the Turkish Defense and Aerospace Industry.

The remainder of this manuscript is organized as follows. The first part sets the theoretical background of the research, reviewing the customer orientation, innovative performance and crowdsourcing concepts. Then, the hypotheses are formulated. After explaining the methodology employed in this study, we present the findings. We conclude with reflections on customer orientation, crowdsourcing and performance relationships as well as innovative and organizational performance link.

Theoretical Background and Hypotheses

The Evolution of Customer Orientation and Changing Role of Customers' as Innovators

Over the past 20-odd years, customer orientation literature has undergone dramatic changes. During the early 1990s, customer orientation meant anticipating customer needs to offer goods and services to those needs to enhance customer satisfaction and loyalty (Slater & Narver, 1994). Throughout this period, customer orientation mostly embraced a user-centric approach, where users were primarily regarded as passive consumers (Hienerth et al., 2011). In other words, they were considered as a source of information rather than deliberate producers of value. However, at the beginning of the new millennium, the concept of customer orientation has started to transform into a user-driven approach, where customers and users have started to function as co-creators of value and helped to conceptualize the innovation (Lusch et al., 2007). In a user-driven approach, users turn out to be subjects rather than the objects. In other words, a user-driven approach requires a transformation from "innovating for the user" to "co-creating the innovation with the user" (Bogers et al., 2010). Today, customers are considered as co-producers of designs, brands, experiences, concepts, products or services (Jeppesen & Molin, 2003; Zwick et al., 2008). In the light of

these developments, it can be said that today co-development can be regarded as a more market-oriented perspective.

Pertaining to customers' role as co-creators or innovators, Lilien et al. (2002) provided evidence that active user involvement in idea generation might benefit a firm's new product development efforts, at least in industrial markets. They found that user-generated products outperformed designer-generated products on key innovation indicators such as product concept's novelty compared to the competition. Lilien et al.'s (2002) findings are also supported by Edvardsson et al. (2010) who posit that ideas from consumers emerge as being more original and valuable. They also argued that whilst users focus on functionally novel innovation, and manufacturers focus on systemic innovation (Edvardsson et al., 2010). In the same vein, Nishikawa et al.'s (2013) work empirically demonstrated that user-generated furniture products outperformed designer-generated furniture products in terms of product novelty, unit sales and gross profit in the first year of introduction and aggregate sales data suggested that the size of this effect increased over time.

Customer Orientation – Crowdsourcing Link and Crowdsourcing's Role in Innovation

As explained in the introductory part of this paper, customer orientation today mostly stands for interaction, and it is inherently interconnected with crowdsourcing. Crowdsourcing is "the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call" (Howe, 2006).

Today, due to rapidly changing customer needs, shorter product life cycles and ever-increasing competitive prices, solely relying on inward-looking business models is no longer a source of sustainable competitive advantage (Hienerth et al., 2011). Crowdsourcing helps companies to achieve competitive advantage through intangible or outward-looking resources (e.g., human, informational and relational resources) unlike static tangible resources, which have been defined in neoclassical theory. For Vargo et al. (2010), the shift in the economy is from focusing on tangible and static resources to intangible and dynamic resources. Their service-centred view is inherently customer oriented and relational. Hunt (2015) also argues that these intangible resources may be a source of long-term competitive advantage as they are relatively immobile and are not easily copied or acquired. Thus, involving users into innovation processes requires to employ dynamic capabilities rather than firm specific static resources.

In light of the shift in the economy from tangible to intangible dynamic resources, crowdsourcing emerges as a powerful business model to leverage firms' sustainable competitive advantage. As Kohler (2015, P.64) puts forward "Successful crowdsourcing-based business models are powerful and hard to replicate because of their inherent community dynamics". Recently, in order to obtain innovative solutions, firms increasingly capitalize from collective wisdom through crowdsourcing platforms (Lee et. Al., 2015). Particularly, recent internet technologies allow firms to crowdsource a myriad of new ideas and come up with innovations on various online platforms. Thanks to Web 2.0 technologies, firms can capitalize on the knowledge of the crowd to design products and create content more skillfully (Hienerth et al., 2011; Xu, et al., 2015). For example, Lego Group pays heed to the wisdom of crowds and leverages external innovation via their Lego Ideas web platform (Lego Ideas, 2019). Likewise, Threadless, the clothing design company, also employs this strategy by building an online community to source and select T-shirt designs. Threadless, unlike traditional t-shirt manufacturers, no longer employs designers but rely exclusively on their 120,000 designers to generate new products (Kohler, 2015). However, as Hienerth et al. (2011) put, these firms are mostly large, well-known companies and insights from their experiences might not hold for all type of companies and settings. Thus, a systematic and empirical assessment of crowdsourcing turns out to be lacking in other settings despite the broad and growing interest in the contemporary phenomenon of crowdsourcing. This is mostly due to the difficulty of obtaining reliable quantitative financial data from real-world practice.

Innovation – Organizational Performance Link

Innovation plays a vital role in management because it is linked to business performance. Previous research documented that there exists a positive and direct relationship between innovation and performance (Khan & Manopichetwattana, 1989; Gunday et al., 2011). For example, Gunday et al.'s (2011) paper on innovativeness study in the Turkish manufacturing industry concluded that innovative firms who adopted innovative measures in the last three years achieved higher market share, total sales and exports compared to previous years. Conversely, other studies have concluded that there is a time lag between innovations and financial performance (Zahra & Das, 1993; Teece, 1998). Likewise, Satell (2020) puts forward that innovations are rarely created in months, and it usually takes about 30 years for it to have measurable effects (Satell, 2020).

In view of the all that has been mentioned so far, one can argue that customers can be integrated as interpreters and translators during

innovation process and there should be a relationship between the customer orientation and an organization's innovative performance.

Thus, this discussion leads to the following hypotheses:

Hypothesis 1. The higher the customer orientation disposition, the higher the innovative performance.

Considering that firms with higher customer orientation are inherently more dynamic in building dynamic resource management capabilities, they have the tendency to employ outward-looking innovation activities through crowdsourcing. We can then hypothesize:

Hypothesis 2. Crowdsourcing enhances the innovative performance of customer-oriented firms.

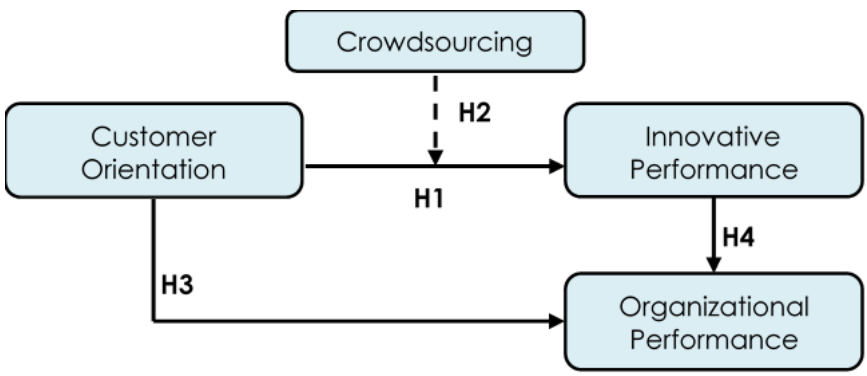
Furthermore, regarding the link between innovative performance and financial performance, one can posit that higher level of innovative performance results in higher rates of financial performance. Thus, we can hypothesize:

Hypothesis 3. Higher innovative performance results in improved organizational performance.

Finally, taking into account the fact that very few studies provided quantitative evidence regarding the exclusive impact of customer orientation on organizational performance, the last hypothesis of the research is introduced as:

Hypothesis 4. There is a positive relationship between customer orientation and organizational performance.

Figure 1: Research Framework



Data and Methodology

Sample

The empirical study was carried out in the Turkish defence and aerospace industry. The industry carries strategic importance by the Department of Turkish Presidential Strategy and Budget with the aim of both (i) increasing national output and reducing military dependence on foreign sources, and (ii) utilizing dual-use technologies between the military and civilian high-tech industries.

The lack of specific data for the variables involved in this study calls for a primary source of information using a survey. Survey participants were selected from the members of Turkish Defense and Aerospace Manufacturers Association (SaSad) who were invited to "The Design of Future Visions Convention" by the Turkish Presidency of Defense Industries in Bolu, Turkey between August 10th and 12th, 2018. Out of 192 SaSad members, 90 members participated in the convention. Surveys were distributed on a random basis to all 90 C-level (CEO, CFO, CMO) executives, who possess critical financial performance measures, such as return on sales, return on assets, general profitability of the firm, and cash flow excluding investments. Of the study population, 54 executives returned the questionnaire, but twelve responses were deemed unusable, resulting in a final sample size of 42.

Characteristics of the companies responding to the survey are presented in Table 1. As indicated in Table 1, the respondents reflected mainly large companies (69.0%). According to OECD (2017, p.36), micro-enterprises are defined as firms with 1-9 persons employed; small enterprises: 10-49; medium enterprises: 50-249; and large enterprises: 250 and more.

Measurement Variables

All constructs included in the survey were measured using five-scale multi-item scales, and all of the scales can be found in the Appendix.

Customer Orientation

The extent of an organization's customer orientation was assessed by employing the validated scale of Desphande and Farley's (1998) customer dimension of market orientation construct.

Crowdsourcing

Crowdsourcing is a relatively new construct, and there has been not much measurement scale that meets the requirements of social sciences. Xu et al. (2015) created the first scale to measure the degree of crowdsourcing introduction in a firm.

Table 1: Company Characteristics and Demographics

Company Characteristics & Demographics	Percentage (%)
Number of Full-Time Employees	
1-9	2.4 %
10-49	9.5 %
50-249	19.0 %
250 and more	69.0%
Scope of Operation	
National	9.5 %
International	2.4 %
Both (National & International)	88.1 %
Executive's Length of Service in Company	
Less than 5 years	21.4 %
5 – 10 years	2.4%
More than 10 years	76.2 %

Innovative Performance

Early studies on the nature of innovation addressed innovation on the basis of technical change, generally in the manufacturing sector (Salter & Oliver, 2014). Even though R&D surveys, patents and academic publications have been given primacy as the main measurement instruments in innovation studies, Hagedoorn & Cloodt (2003) innovative performance measure is more inclusive in assessing innovative performance in a variety of dimensions, such as "innovations introduced for work processes and methods", and "renewal of the administrative system and the mindset in line with firm's environment".

Organizational Performance

Organizational performance is a complex construct to measure. Different authors have measured organizational performance in a variety of ways. However, Capon et al.'s (1990) financial performance measure has been extensively adopted in the literature, and it is the most common measure for determining organizational performance.

Analysis and Results

Stage 1: Construct Reliability and Validity

The small size of the dataset meant that it was not possible to perform factor analytic methods. It is common statistical advice not to attempt a reliability analysis with a sample size less than 300 (Kline, 1986). Thus, reliability was calculated using Cronbach's Alpha. A coefficient value above 0.7 is considered acceptable as an often-quoted rule of thumb (Kline, 1999). The Cronbach a values for the underlying factors range from 0.830 to 0.898 (as depicted in Table 2)

suggesting satisfactory levels of construct reliability since for Cronbach a values greater than 0.70 is accepted as reliable (Cronbach, 1951; Streiner, 2003).

Table 2: Cronbach's Alpha

Measures	Number of Statements	Cronbach's Alpha (a)
Customer Orientation	7	0.841
Innovative Performance	7	0.830
Crowdsourcing	8	0.875
Organizational Performance	4	0.898

Stage 2: Relationship Analysis

For a general assessment of the relationships between constructs, a correlation was run with the variables shown in Table 3. A Pearson correlation or the product moment correlation is a number between -1 and 1 that indicates the extent to which two variables are linearly related (Malhotra, 2007). The results of the correlational analysis are summarized in Table 3.

Table 3 shows that while a strong positive correlation was found between customer orientation and innovative performance (r=0.605, p=0.000) (**H1**), no correlation was found between innovative and organizational performance contrary to expectations (p > 0.05) (**H4**). Furthermore, looking at Table 3, a moderate positive relationship was found between customer orientation and organizational performance (r=0.309, p=0.000) (**H3**). What stands out in Table 3, however, is the strong positive correlation between crowdsourcing and innovative performance (r=0.683, p=0.000) (**H2**).

Table 3: Regression Analysis

Variables	Customer Orientation	Innovative Performance	Crowdsourcing	Organizational Performance
Customer Orientation	1.00			
Innovative Performance	0.605** (0.000)	1.00		
Crowdsourcing	0.559** (0.000)	0.683** (0.000)	1.00	
Organizational Performance	0,309** (0.000)	0.302 (0.052)	0.255 (1.000)	1.00

Stage 3: Regression and Hierarchical Regression Analyses

Statistical analysis was performed using SPSS software (version 25). First of all, due to its practical advantages, a regression analysis was used

to predict the impact of customer orientation on innovative and organizational performance. Then, a hierarchical regression analysis was performed to predict the mediating impact of crowdsourcing between customer orientation and innovative performance. Sobel test of mediation was applied, and results for mediation was significant with respect to crowdsourcing. (Sobel, 1982).

It was hypothesized that "The higher the customer orientation disposition, the higher the innovative performance" (**H1**). It can be seen from the data in Table 4 that customer orientation has a conspicuous influence on innovative performance, and the result indicates that higher levels of customer orientation enhance organizations' innovative performance.

Table 4: The Impact of Customer Orientation on Innovative Performance

Dependent Variable: Innovative Performance							
Independent Variable	**ß**	**t**	**p**	**F**	**Model (p)**	**R**	**Adjusted R^2**
Constant	11.449	3.613	0.001	23.140	0.000	0.605	0.351
Customer Orientation	0.539	4.810	0.000				

It was also hypothesized that "The higher the customer orientation disposition, the higher the organizational performance" (**H3**). As can be seen from Table 5, customer orientation has a positive impact on organizational performance. This finding supports the work of Brockman et al. (2012, P.438) who wrote that "customer orientation alone, without moderating factors, has a significant, positive influence on small firm performance, which helps solidify the relevance of customer orientation as a single variable".

Table 5: The Impact of Customer Orientation on Organizational Performance

Dependent Variable: Organizational Performance							
Independent Variable	**ß**	**t**	**p**	**F**	**Model (p)**	**R**	**Adjusted R^2**
Constant	10.382	4.243	0.000	4.214	0.047	0.309	0.073
Customer Orientation	0.178	2.053	0.047				

It was further hypothesized that "Crowdsourcing enhances the innovative performance of customer-oriented firms" (**H2**). The results, as shown in Table 6, indicate that crowdsourcing, as a mediator, significantly enhances customer orientation's impact on innovative performance. A comparison of Tables 4 and 6 suggests that

innovative performance is exceptionally enhanced following the implementation of crowdsourcing.

Table 6: The Mediating Role of Crowdsourcing on Innovative Performance

Independent Variable	Dependent Variable	R^2	F	β	t	p
Customer Orientation	Innovative Performance	0.539	22.048 p=0.000	0.325 0.501	2.478 3.823	0.018 0.000
Crowdsourcing	0.539	4.810	0.000			

Discussion

In this study, the relationship between customer orientation, innovative performance and organizational performance was examined. Crowdsourcing's mediating impact on innovative performance was also assessed. In the study sample, it was found that (1) customer orientation has a considerable impact on organizational performance, and it enhances organizations' innovative performance to a great extent (supporting H3 and H1); (2) an insignificant relationship exists between innovative and organizational performance contrary to expectations (contrasting H4); (3) and crowdsourcing exceptionally helps organizations to augment their innovative performance (supporting H2).

Customer Orientation, Crowdsourcing and Performance Link

The results of this study are significant in at least two major respects. First of all, this work is an interesting contribution to the literature as previous "customer orientation – performance relationship" studies are mainly constrained to the limitations of SMEs in service industries. The reason for this is that customer orientation has mostly been associated with SMEs, and it has been considered a tool for small firms to differentiate themselves from larger firms especially in services (Brockman et al., 2012). Thus, so far, there have been no attempts to examine customer orientation – performance relationship in a different setting. As shown in Table 1, 69 % of the study population of this research comprises of large enterprises whose number of full-time employees are 250 and more. Besides, 88.1 % of the study population of this research comprises of enterprises which operate both at the national and international scope. The results of the analysis allow confirming the assumptions made about the positive link between customer orientation and organizational performance in a manu-service industry with different company characteristics, supporting the study of Brockman et al. (2012).

Secondly, while prior studies proved that particularly consumer-oriented large enterprises put users and consumers to good use through crowdsourcing platforms thanks to Web 2.0 technologies, the evidence from this study suggests that users bring experiences to functionally novel innovations through crowdsourcing in the Turkish defence and aerospace industry, which exhibits domain-specific characteristics. Users in this domain-specific industry are mostly recognized as lead users. Novelty is a high priority in the defence and aerospace industry. Thus, users have more innovative behaviours. They know what they are intended to do and how they are supposed to do. This is why the relationship between customer orientation and innovative performance is exceptionally enhanced following the implantation of crowdsourcing. This finding also supports the study of Xu et al.'s (2015, p.1166) who wrote: "The implantation of crowdsourcing techniques exerts an indirect influence by developing innovation distinctive competences". As a result, the findings of this study suggest that crowdsourcing practices can play a vital role in increasing innovative performance, particularly in domain-specific industries.

In the light of the above discussions and findings, it can be concluded that customer orientation is subject to changes in parallel with the developments in technology and innovation activities (e.g., Web 2.0 technologies, open innovation activities, crowdsourcing platforms) and crowdsourcing has emerged as a powerful practice to deploy customer orientation. However, crowdsourcing requires a different set of strategic choices to create value as they are fundamentally different from traditional producer-consumer strategies.

Innovative and Organizational Performance Link

Although previous research in the manufacturing industry in Turkey concluded that innovative performance has a positive impact on financial performance (Gunday et al., 2011), as Table 3 shows, no significant relationship was found between innovative and organizational performance contrary to expectations ($p > 0.05$) (**H4**).

A possible explanation for this is that financial effects are difficult to prove in a static analysis since, for example, financial leverage may have a significant negative effect on financial performance. As organizations' financial debt increases beyond the optimum level, financial performance declines. In addition to financial leverage, other factors such as age and size of the company have a notable effect on financial performance (Omondi & Muturi, 2013).

Another likely explanation is the role of time in assessing innovative performance. Innovation does not manifest itself to be immediately

profitable because of the time needed to diffuse a new innovation in the market. In other words, there is a time lag effect between innovations and financial performance. Researchers (Kafouros & Wang, 2008; Gunday et al., 2011) also took into consideration that a certain amount of time might be needed to observe the reflection of the positive impact of innovative performance on financial performance. In the same vein, Zahra and Sidhartha (1993) and Teece (1988) also stated the time lag effect between innovation and financial performance. Pakes and Schankerman (1984) put forward that the total lag of R&D is composed of both "gestation lag" and "application lag" (Pakes & Schankerman, 1984). While the former term refers to the time between project inception and project completion, the latter refers to the average time lag between project completion and commercial application. Bloom and Van Reenen (2002) articulated that patents take about four years for them to influence firm performance, while they have a positive impact on market value almost instantly (Bloom & Reenen, 2002).

Time lag phenomena are more evident in the evolutionary development of a given branch of science: the preparadigmatic stage, where the acceptance of agreed-upon standards are not strongly established. At this stage, technological maturity still lacks (Teece, 1998). For example, by the turn of the 20th century, electric power technology was a new techno-economic regime, and it did not yield the desired economic consequences before the early 1920s, even though electric lighting was being used in 1899 in the United States (David, 1990). By the same token, the modern history of commercial drones or UAVs (unmanned aerial vehicle) dates back to 1982. The first drones were used by the Israeli Air Force to reckon the enemy's position, to jam communications, and to act as decoys that would prevent the loss of pilot life. However, the benefits of this technology extended from military applications to civilian uses after 24 years, only in 2006 (Martinez, 2019). Today, UAVs are tackling everything from providing internet access to rural parts of the world to planting crops to delivering pizza, and more (Mazur, 2019).

Also, it is important to note that even though innovations do not yield a positive impact on financial performance in the short-term, it is a stimulating force for the product, market and financial performance over the long-term (Damanpour & Evan, 1984). Furthermore, innovative activities help to promote a firm's reputation, which in turn helps to attract new potential customers for the firm. The new customers will boost a firm's financial performance in the long run (Beswick et al., 2018). Thus, expecting outsized monetary returns from innovation in the short term appears to be implausible. This fact

explains why executives often complain about not being able to reap the immediate benefits of their innovative efforts. Boston Consulting Group's Annual Innovation Report in 2007 articulated that although innovation continues to be a highly valued and desired capability in the United States, many executives are purely driven by pecuniary returns and remain frustrated with the return on investment (ROI) or return on research capital (RORC) (Andrew et al., 2007).

Finally, due to the strict rules, regulations and laws (Law No.5201- control of private industrial enterprises producing war weapons, equipment, vehicles, ammunition and explosives; Law No.5202- the defence industry security law) regulating the Turkish defence industry, the effects of innovative performance on organizational performance remains limited (Resmi Gazete, 2020). The international sales of innovative military equipment, arms and ammunition are constrained by national security reasons by the Ministry of National Defense. Thus, innovative performance does not have an immediate positive impact on financial performance in this domain-specific industry.

Regarding the innovation – performance link, Brynjolfsson & McAfee (2015, p. 94) drew an analogy, stating that "innovation is like growing fruit trees from seeds and benefiting from innovation is like having the fruits of previously planted seeds". Thus, innovation should be considered as venture capital and as a long-term capital spending rather than an investment which will boost the bottom line in the short-term.

Appendix. Measurement of Variables

A.1. Customer Orientation Measures

To what extent is customer orientation implemented in your organization related to the following kinds of activities? (Five-point scales ranging from 1= 'not implemented' to 5= 'fully implemented')

Q#	Variables	Mean	Std. dev.
1	Our business objectives are driven primarily by customer satisfaction.	4.30	0.71
2	We constantly monitor our level of commitment and orientation to serving customer needs.	4.33	0.84
3	Our strategy for competitive advantage is based upon our understanding of customer needs.	4.21	0.75
4	We measure customer satisfaction systematically and frequently.	3.83	0.96
5	We are more customer-focused than our competitor.	4.09	0.87
6	We poll end users at least once a year to assess the quality of our products and services.	3.47	1.25
7	Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis.	3.59	1.16

A.2. Crowdsourcing Measures

To what extent is crowdsourcing implemented in your organization related to the following kinds of activities? (Five-point scales ranging from 1= 'not implemented' to 5= 'fully implemented')

Q#	Variables	Mean	Std. dev.
1	Our firm has introduced platforms to develop ideas about new products or services.	3.47	0.74
2	Users can freely express their ideas about the introduction of new innovations in the firm.	3.64	0.95
3	Our firm considers that a group of users can develop new ideas about new products or services or to improve the existing ones.	4.00	0.82
4	There are financial and non-financial incentives to develop the best ideas.	3.73	0.93
5	Our firm has evaluation systems to know the effectiveness of the ideas developed.	3.71	0.99
6	There are knowledge transfer systems to disseminate the best ideas.	3.40	0.93
7	Our firm uses virtual communities to develop new products or services.	3.47	0.96
8	New ideas take into account the stakeholders of the firm.	3.66	0.78

A.3. Innovative Performance Measures

How would you rate the level of achievement of the following innovative performance items in your organization in the last three years compared to the previous years? (Five-point scales ranging from 1 = "unsuccessful" to 5= "very successful".)

Q#	Variables	Mean	Std. dev.
1	Ability to introduce new products and services to the market before the competitors.	3.61	0.90
2	Percentage of new products in the existing product portfolio.	3.73	0.96
3	Number of new products and service projects.	3.90	0.79
4	Innovations introduced for work processes and methods.	3.85	0.95
5	Quality of new products and services introduced.	4.09	0.72
6	Number of innovations under intellectual property protection.	3.38	0.88
7	Renewing the administrative system and the mind set in line with firm's environment.	3.88	0.83

A.4. Financial Performance Measures

How would you rate the level of achievement of the following financial performance items in your organization in the last three years compared to the previous years? (Five-point scales ranging from 1 = "unsuccessful" to 5= "very successful".)

Q#	Variables	Mean	Std. dev.
1	Return on Sales (Profit / Total Sales)	3.78	0.81
2	Return on Assets (Profit / Total Assets)	3.78	0.75
3	General Profitability of the Firm	3.97	0.78
4	Cash Flow Excluding Investments	3.78	0.81

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