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A Scale Development Study on Excellent Leadership in Management Processes [1][2]

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Abstract

Schools are among the most important institutions in which a qualified workforce is cultivated. The effectiveness of schools in delivering high-quality education largely depends on school administrators' competencies in managing administrative processes. A review of the literature indicates that there is no valid and reliable measurement instrument to assess the extent to which administrators successfully perform management processes. Therefore, the present study aims to develop and validate a scale measuring school administrators' excellence in leadership within management processes. The study employed a quantitative research design and was conducted in two stages with a total of 631 teachers selected through simple random sampling from schools in the central district of Manisa and Turgutlu, with voluntary participation of teachers. In the first stage, a comprehensive literature review was conducted and an initial pool of 70 items was generated. Expert opinions were obtained to ensure content and face validity, and the draft scale was revised accordingly. In the first stage, Exploratory Factor Analysis (EFA) was conducted on the data from 281 teachers to define the scale's constructs and evaluate its structure. Items with low or cross loadings were removed, resulting in a 35-item scale with seven dimensions. Internal consistency was assessed using Cronbach's alpha coefficients, item-total correlations, and upper-lower 27% group comparisons. The results indicated high internal consistency. Relationships among sub dimensions were examined using Pearson correlation analysis, revealing significant and coherent associations. In the second stage, Confirmatory Factor Analysis (CFA) was conducted using data obtained from a different sample of 350 teachers, and the seven-dimensional structure was confirmed. The findings confirm that the developed Scale of Excellence in Leadership in Management Processes is a valid and reliable measurement scale. Retesting the scale across different educational levels and samples has been recommended to enhance its generalizability.

Keywords: Leadership, excellence, school administrator, scale development.

Öz

Okullar, nitelikli insan gücünün yetiştirildiği en önemli kurumlardan biridir. Okulların kaliteli eğitim sunabilmesi büyük ölçüde okul yöneticilerinin yönetim süreçlerini etkili bir biçimde yürütme yeterliklerine bağlıdır. Alanyazın incelendiğinde, okul yöneticilerinin yönetim süreçlerini ne ölçüde başarılı bir şekilde yerine getirdiklerini değerlendirmeye yönelik geçerli ve güvenilir bir ölçme aracının bulunmadığı görülmektedir. Bu doğrultuda, bu çalışmanın amacı okul yöneticilerinin yönetim süreçlerinde liderlik mükemmelliğini ölçmeye yönelik geçerli ve güvenilir bir ölçek geliştirmektir. Araştırma nicel araştırma deseninde yürütülmüş olup, iki aşamada gerçekleştirilmiştir. Çalışmaya, Manisa ili merkez ilçesi ve Turgutlu ilçesindeki okullarda görev yapan öğretmenler arasından basit seçkisiz örnekleme yöntemiyle belirlenen ve gönüllü olarak araştırmaya katılan toplam 631 öğretmen dâhil edilmiştir. İlk aşamada kapsamlı bir alanyazın taraması gerçekleştirilmiş ve 70 maddelik bir madde havuzu oluşturulmuştur. Ölçeğin kapsam ve görünüş geçerliğini sağlamak amacıyla uzman görüşlerine başvurulmuş, alınan geri bildirimler doğrultusunda taslak ölçek yeniden düzenlenmiştir. Daha sonra 281 öğretmenden elde edilen veriler üzerinde Açımlayıcı Faktör Analizi (AFA) uygulanarak ölçeğin faktör yapısı belirlenmiş ve yapı geçerliği incelenmiştir. Faktör yükü düşük olan veya birden fazla faktöre yüklenen maddeler çıkarılmış, sonuçta yedi boyut ve 35 maddeden oluşan bir ölçek elde edilmiştir. Ölçeğin iç tutarlılığı Cronbach alfa katsayıları, madde-toplam korelasyonları ve %27 alt-üst grup karşılaştırmaları ile değerlendirilmiş; elde edilen bulgular ölçeğin yüksek düzeyde iç tutarlılığa sahip olduğunu göstermiştir. Ayrıca alt boyutlar arasındaki ilişkiler Pearson korelasyon analizi ile incelenmiş ve boyutlar arasında anlamlı ve

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kuramsal olarak tutarlı ilişkiler olduğu belirlenmiştir. Araştırmanın ikinci aşamasında ise farklı bir örneklemden elde edilen 350 öğretmene ait veriler üzerinde Doğrulayıcı Faktör Analizi (DFA) uygulanmış ve ölçeğin yedi boyutlu yapısı doğrulanmıştır. Elde edilen bulgular, geliştirilen Yönetim Süreçlerinde Liderlik Mükemmelliği Ölçeğinin geçerli ve güvenilir bir ölçme aracı olduğunu ortaya koymaktadır. Ölçeğin genellenebilirliğinin artırılması amacıyla farklı eğitim kademelerinde ve farklı örneklemler üzerinde yeniden test edilmesi önerilmektedir.

Anahtar Kelimeler: Liderlik, mükemmellik, okul yöneticisi, ölçek geliştirme.

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Introduction

Education, beyond being a fundamental social process that supports individuals' cognitive, social, and affective development, serves a strategic function in achieving the sustainable welfare and progress goals of societies. In this regard, the success of educational institutions is not limited solely to the content of curricula or the quality of pedagogical practices. It is also directly related to the visionary perspectives, ethical sensitivity, and administrative competencies of the leaders who manage these institutions (Hallinger, 2011; Leithwood & Jantzi, 2006). Indeed, the leadership qualities of school administrators directly influence numerous critical outcomes, ranging from teachers' professional performance and student achievement to school climate and organizational commitment (Day et al., 2009; Robinson, 2011).

When examining the history of humanity, it becomes evident that the fundamental driving force behind change and development has consistently been the pursuit of "improvement." At the center of this pursuit lies the concept of leadership. Heraclitus' statement, "The only constant is change," provides an important philosophical foundation for understanding the transformation of leadership over time. Effective leadership is not merely a phenomenon aimed at individual success; it is also regarded as a fundamental structure that shapes institutions' ability to adapt to change, maintain continuity, and achieve sustainable success (Fullan, 2001; Yukl, 2012). The pursuit of excellence in leadership, that is, the drive to achieve the best, is a continuous process that will persist as long as the world exists, accompanied by the discovery of unknowns and the acquisition of new knowledge. In contemporary management approaches, the continuous pursuit of improvement and adaptation to change are factors that organizational managers and leaders must consider. Organizations that fail to keep pace with these developments may struggle to sustain their existence. In essence, the process of change is inherently complex and is generally met with resistance from employees within the organization. However, this process can be effectively managed by managers seeking to transition from administration to leadership through the vision and strategies they implement.

In recent years, criticisms that traditional leadership approaches are insufficient to respond to the increasingly complex and dynamic structure of educational organizations have become markedly more pronounced (Bolden, 2004). In particular, in educational organizations characterized by multiple stakeholders, rapid change, and high expectations, school administrators are expected not only to maintain administrative operations but also to adopt a leadership approach that is ethically grounded, strategically oriented, collaborative, sustainable, and continuously striving for improvement. Motivated by these requirements, the concept of excellence in leadership has gained a prominent position within contemporary leadership paradigms, offering a novel perspective at both theoretical and practical levels (Kıral, 2020; Sergiovanni, 1995).

Excellence in leadership encompasses not only possessing administrative competencies but also recognizing the potential of employees, guiding them toward high performance, integrating organizational vision with ethical values, and prioritizing sustainable success within a holistic leadership process (Kıral, 2021). This approach aligns with contemporary leadership models such as transformational, distributive, ethical, and servant leadership, and embodies a quality that integrates

these models (Northouse, 2021; Spillane, 2005). Therefore, excellence in leadership can be viewed not merely as a theoretical framework but also as a practice-oriented, continuous development process that directs the dynamic structure of organizations and enables both employees and leaders to maximize their potential.

In educational organizations, a leader's visionary, ethical, and inclusive attitude, along with a continuous pursuit of improvement, should be reflected across all management processes, from decision-making and communication strategies to planning and evaluation. In this context, understanding how the concept of excellence in leadership integrates with and transforms management processes is of critical importance for comprehending the quality of leadership within educational institutions. Management processes constitute the fundamental building blocks of organizational functioning, encompassing dimensions such as decision-making, planning, organizing, communication, coordination, influence, and evaluation (Gregg, 1957). Integrating these processes with the approach of excellence in leadership not only provides a functional management structure but also contributes to shaping the school's cultural framework, fostering a more participatory, equitable, and effective organizational environment (Kıral & Deliveli, 2019; Tschannen-Moran, 2004).

The excellence in leadership approach addresses the collective effort to achieve the best outcomes with all organizational stakeholders from a holistic perspective. Commitment to ethical values, strategic vision, the ability to unlock human potential, and a collaborative management approach are among its core components. An excellent leader is not only responsible for administrative tasks but also serves as a guide who transforms organizational culture, promotes development, and unites stakeholders around shared objectives (Kıral, 2021). Excellence in education encompasses not only academic achievement but also a value-based, sustainable quality perspective that prioritizes the multidimensional development of students, teachers, and all stakeholders.

In Turkey, studies based on the excellence in leadership approach (Kıral, 2020; 2021; 2022; 2023; 2025; Kıral & İstanköylü, 2024; 2025; Kıral & Konay, 2024) have shown a marked increase in recent years. However, it is noteworthy that comprehensive studies examining school administrators' leadership behaviors-particularly in the context of management processes and based on teachers' perspectives-remain limited. This situation clearly underscores the need for new and original research in the field. The perceptions of actors directly involved in practice, such as teachers, are critically important for understanding the real-world impact of leadership practices in educational settings (Erdoğan, 2004; Özdemir, 2016).

Teachers' evaluations of school administrators' levels of excellence in leadership not only generate academic data but also provide guiding indicators for policymakers and practitioners. This is because teachers are among the primary stakeholders who directly witness leadership practices and are affected by their outcomes. The effective and exemplary use of management processes by school administrators can positively influence teachers' attitudes and involves the teacher in decisions directly related to that potential, and aims to maximize the teacher's capacity can be considered an important indicator of excellence in leadership from the perspective of the school administrator. However, within the existing literature (Kıral & İstanköylü, 2025; Kıral & Konay, 2024; Kıral & Tornay, 2025; Konay, 2024, etc.), no valid and reliable measurement instrument has been identified that assesses the extent to which management processes are implemented within the framework of the excellence in leadership approach.

As noted above, addressing this gap requires a measurement instrument that enables the assessment of school administrators' levels of excellence in leadership within the context of management processes. Determining the levels of excellence in leadership of school administrators with respect to management processes, based on teachers' perspectives, can yield significant outcomes at both theoretical and practical levels. From a theoretical standpoint, the study can provide original contributions to the educational administration literature by empirically demonstrating how the excellence in leadership approach is structured in the educational context and how it relates to management processes. From a practical perspective, the developed scale can serve as a strategic tool in identifying the professional development needs of educational administrators, planning in-service

training programs, implementing school improvement initiatives, and conducting administrator evaluation processes.

With the scale, leadership practices in educational organizations can be assessed in a more objective, measurable, and evidence-based manner. Naturally, this can also contribute to strengthening an ethical, collaborative, and effective management culture. As can be seen, the expected role of school administrators is not limited to fulfilling administrative duties. They are also expected to demonstrate high-level leadership competencies and present a vision capable of continuously advancing their schools. Accordingly, this study was conducted to develop a measurement instrument that can reveal the extent to which school administrators implement the excellence in leadership approach while carrying out management processes.

The aim of the study is to develop a measurement instrument capable of assessing the levels of excellence in leadership of school administrators in public lower secondary schools with respect to management processes. In line with this aim, the study seeks to answer the following questions:

1. According to teachers' perspectives, is the measurement instrument developed to assess school administrators' excellence in leadership regarding management processes a valid tool?
2. According to teachers' perspectives, is the measurement instrument developed to assess school administrators' excellence in leadership regarding management processes a reliable tool?

Method

Research Model

This study is a scale development study conducted within the survey model framework, aimed at determining the levels of excellence in leadership of school administrators in public lower secondary schools in the context of management processes, based on the perspectives of lower secondary school teachers. It is a primary research study grounded in a quantitative research approach (DeVellis & Thorpe, 2021; Tabachnick & Fidell, 2019).

Study Group and Sample

The population of the study consists of teachers working in public middle schools in the central district of Manisa and the Turgutlu district during the 2023–2024 academic year. However, due to limitations such as time, cost, and accessibility, it was not possible to reach the entire population; therefore, the study was conducted in two stages based on the study group and sampling.

The population for the first stage of the study consisted of teachers working in public middle schools in the Turgutlu district. The literature provides various recommendations regarding sample size for scale development studies. According to Büyüköztürk (2021), 5–10 participants per item on the draft scale are sufficient. Tavşancıl (2019) suggests a sample of at least 100–200 participants for validity and reliability analyses, while DeVellis (2017) indicates that at least 200 participants are required for comprehensive analyses. Accordingly, for the 70-item draft scale developed through literature review and expert opinions, it was planned to reach five times the number of items, targeting 350 teachers. A total of 736 teachers were identified as working in 25 public middle schools in the Turgutlu district, where a full enumeration was conducted. Since it was necessary to reach 350 voluntary participants for the study, an attempt was made to visit all schools; however, some schools could not be reached due to the aforementioned constraints (time, cost, and accessibility, etc.). A total of 19 schools were visited, and the necessary information was provided to the school administrators and the teachers present on the day of the visit. Through the school administration, the link to the online scale form was sent to 657 teachers working in the visited schools, and teachers who wished to participate voluntarily were asked to complete the online scale form within a 15-day period. While participants were expected to complete the form within the allotted time, periodic reminders were provided through the school administrators. Since the target number of 350 participants was reached two days before the scheduled end date, the data collection process was concluded, ensuring attention to the distribution of data across schools. Upon reviewing the data collection instruments, it was determined that 312 teachers had completed the scale in full, and these participants naturally formed the study group. However, outliers identified through normality analyses were excluded from the

dataset, and all analyses were conducted using data obtained from 281 teachers. This sample size was deemed sufficient for conducting exploratory factor analysis and reliability testing (Büyüköztürk, 2021; Tabachnick & Fidell, 2019).

The second stage of the study aimed to confirm the seven-dimensional, 35-item structure identified through exploratory factor analysis. In this stage, the population consisted of 1479 teachers working in 45 public middle schools in the central district of Manisa. The sample for the study was determined using a simple random sampling method to ensure representativeness of the population. This method increases the representativeness of the sample and supports the validity of the findings, as every individual in the population has an equal probability of being selected (Karasar, 2024). Sample size was determined using sample calculation tables and software; for a population of 1479 individuals, with a significance level of $\alpha = .05$ and a 5% margin of error, it was calculated that at least 306 participants would be sufficient (Balcı, 2023). However, considering potential issues that could arise during the data collection process, the sample size was set at 350 teachers. In this stage, 22 schools were visited using the same simple random sampling method, and the necessary information was provided to the school administrators and the teachers present on the day of the visit. Through the school administration, the link to the online scale form was sent to 921 teachers working in the visited schools, and teachers who wished to participate voluntarily were asked to complete the online scale form within a 15-day period. While participants were expected to complete the form within the designated timeframe, periodic reminders were provided through the school administrators, as in the first stage. The target number of 350 participants was reached five days before the scheduled end date, and attention was again given to the distribution of data across schools. Upon reviewing the data collection instruments, it was determined that all 350 teachers had completed the scale in full, and analyses confirmed that there were no outliers. The study was conducted using the data obtained from these 350 teachers.

Data Collection Instrument

A scale was developed for this study. In the scale development process, all stages of psychometric techniques were carefully followed, including literature review and item pool creation, expert consultation, pilot testing, validity analyses (Exploratory and Confirmatory Factor Analysis—EFA and CFA), and reliability analyses (Büyüköztürk, 2021; Can, 2016; DeVellis, 2017; Karasar, 2024; Tavşancıl, 2019; Kline, 2016). In the first stage, the literature and existing scales related to management processes were examined (Ebabil, 2015; Gül, 2017; Kıral & Başaran, 2024; Kasım, 2008; Kuğuoğlu, 1997). As a result of this review, a general item pool of 210 items, thought to encompass excellence in leadership related to management processes, was created for the draft scale. The items were extensively discussed over a two-week period by the researcher, the research advisor, three master's students and one doctoral student in the field of educational administration, and a researcher who had recently completed their doctorate; items deemed inappropriate were removed. The individuals involved in the discussion of the items were also practicing teachers and administrators in schools. As a result of this initial evaluation, a draft scale form consisting of 84 items was created, structured into seven dimensions-decision making, planning, organizing, communication, coordination, influence, and evaluation-with 12 items under each dimension. Thus, the first stage of the scale development process was completed.

In the second stage, the aim was to ensure the content and face validity of the draft form of the "Excellence in Leadership in Management Processes Scale" (ELMPS). To establish content and face validity, the opinions of 12 experts working in the field of educational administration were consulted (Karasar, 2024; Kaptan, 1998). Based on the experts' feedback, items deemed inappropriate in terms of content and appearance were eliminated, necessary revisions were made, and the draft scale was reduced to 70 items, with 10 items in each dimension. Additionally, at this stage, the Content Validity Ratio (CVR) was calculated to ensure the content validity of the draft measurement instrument. The content validity ratio is a quantitative indicator used to determine the extent to which each item on a scale is essential and representative of the construct it intends to measure. Generally, the content validity ratio is calculated using Lawshe's technique (Büyüköztürk, 2021). This technique determines the adequacy of an item in representing the scale. In Lawshe's method, the opinions of at least 5 to 40 experts are required. In this study, for the 12 experts consulted, items were considered acceptable if

their Content Validity Ratio (CVR) exceeded .49 at a significance level of .05 (Yurdugül, 2005). The analyses revealed that the overall Content Validity Index (CVI) of the scale was .86. It was concluded that the content validity of the draft scale was statistically sufficient.

In the third stage, the pilot testing of the data collection instrument was conducted using data obtained from 281 teachers working in the Turgutlu district. The internal consistency of the scale items was examined through item–total correlations using the data obtained from the pilot test. Subsequently, to determine the discriminative power of the items, t-values were analyzed for the differences in item mean scores between the lower and upper 27% groups. Based on the analyses, necessary adjustments were made to the items, and the construct validity of the scale was evaluated using Exploratory Factor Analysis (EFA). The reliability of the data collection instrument derived from the EFA was assessed using the Cronbach's Alpha internal consistency coefficient. The scale was structured as a 5-point Likert-type scale, rated as follows: (1) Never, (2) Rarely, (3) Occasionally, (4) Often, and (5) Always. Likert-type scales are widely used in social science research (DeVellis, 2017). A Likert-type scale is a data collection tool designed to measure participants' opinions, attitudes, or feelings regarding a particular topic or statement (Büyüköztürk, 2021). The level of excellence in leadership of school administrators was assessed based on the scores obtained from the scale, categorized as very low, low, medium, high, and very high. Exploratory Factor Analysis (EFA) for construct validity was conducted using SPSS software.

In the final stage, Confirmatory Factor Analysis (CFA) was conducted using the JAMOVI program to verify the extent to which the structure obtained from the EFA fit the data. CFA is a model-based analytical method that tests how well a theoretically predetermined structure aligns with the observed data. To ensure more robust results in the scale development process, it is recommended that CFA be performed on a new sample group following EFA (Can, 2016). Accordingly, to confirm the model derived from the EFA, data collected from a new sample of 350 teachers in the central district of Manisa were subjected to CFA. In this analysis, goodness-of-fit indices were used to evaluate the model's fit, including the Chi-square goodness-of-fit test (χ^2/df), Comparative Fit Index (CFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), Root Mean Square Residual (RMR), and Root Mean Square Error of Approximation (RMSEA). For the model to be considered an acceptable fit, CFI, NFI, and NNFI values were required to exceed .90, while RMR and RMSEA values were expected to be below .08 (Hu & Bentler, 1999). According to these criteria, the evaluation indicated that the obtained goodness-of-fit indices were appropriate.

Data Collection and Analysis

Data were collected in two stages from both the study group and the sample group. For the research, official letters requesting permission, along with the data collection instrument and its online link, were sent to the selected schools through the Turgutlu and central Manisa District Directorates of National Education. The primary researcher also visited the schools in person to meet with both the school administrators and the teachers present that day. Through the school administration, teachers were asked to complete the online scale form voluntarily. School administrations shared the link to the data collection instrument via teachers' WhatsApp groups, and teachers willing to participate in the study were asked to complete it within a 15-day period. In the first stage, pilot testing was conducted using 281 completed data collection forms obtained from the Turgutlu district, resulting in a 7-dimension scale with 35 items. Subsequently, 350 data collection forms from the central district of Manisa were used to verify whether the scale derived from the pilot test could be confirmed.

In the first stage, statistical analyses of the data obtained from 350 responses were conducted using SPSS 27 (Statistical Package for the Social Sciences) and JAMOVI (version 2.6.17), which are suitable for quantitative data analysis. Prior to the analysis process, the normality assumption of the responses to the scale items was examined. In this context, measures of central tendency (mean, median, and mode) as well as skewness and kurtosis coefficients were analyzed. The results indicated the presence of outliers, which were excluded from the dataset; consequently, the final analyses were conducted using data obtained from 281 teachers. No missing data were identified in the collected dataset. The findings revealed that the measures of central tendency were closely aligned, and both

skewness and kurtosis coefficients ranged between -1.5 and +1.5, indicating that the data were normally distributed (Tabachnick & Fidell, 2019).

In order to determine the construct validity of the measurement instrument used in the study, item-total correlations were examined, an independent samples t-test was conducted for the upper and lower 27% groups, and Exploratory Factor Analysis (EFA) was performed. Construct validity is crucial as it indicates the extent to which the developed scale represents the theoretical construct it intends to measure (Büyüköztürk, 2021). The results revealed that item-total correlation coefficients for all items were positive and ranged between .51 and .79. Item-total correlations above .30 indicate that the item has sufficient discriminative power within the scale and contributes to high internal consistency.

Effect sizes for the t-test results were calculated using Cohen's d, and interpreted as small (d=.20-.49), medium (d=.50-.79), and large (d ≥ .80) (Büyüköztürk, 2021). EFA is a statistical technique used to identify underlying latent dimensions of a scale by reducing a large number of observed variables into meaningful factors; therefore, it is widely used in the early stages of scale development studies (Tabachnick & Fidell, 2019). In this study, EFA was conducted to determine the underlying factor structure of the scale, and Varimax rotation (an orthogonal rotation method commonly used in SPSS) was employed to achieve a simpler and more interpretable factor structure.

To determine the reliability of the resulting 35-item, seven-dimensional scale, Cronbach's Alpha (α) coefficients were calculated. The alpha value for the overall scale was found to be .96, while the sub-dimensions ranged between .96 and .97. A Cronbach's Alpha coefficient between .60 and .90 is generally considered acceptable in terms of reliability (Tavşancıl, 2019). In addition, Pearson Product-Moment Correlation Coefficients were computed to examine the relationships among the sub-dimensions of the scale (Tabachnick & Fidell, 2019). Correlation coefficients were interpreted as low (.00–.29), moderate (.30–.69), and high (.70–1.00) (Büyüköztürk, 2021). All statistical analyses were conducted at a significance level of .05 using two-tailed tests.

In the second phase of the study, the data collected from the central district of Manisa were analyzed. Before commencing the analysis, it was examined whether the responses to the scale items met the assumption of normal distribution. To this end, measures of central tendency (mean, median, mode) as well as skewness and kurtosis coefficients were analyzed. The examination revealed that there were no outliers, the central tendency measures were close to each other, and the skewness and kurtosis coefficients ranged between -1.5 and +1.5, indicating that the data were normally distributed (Tabachnick & Fidell, 2019). Based on this, the normality of the data was confirmed, and parametric tests were preferred for the analyses. Confirmatory Factor Analysis (CFA) was conducted using JAMOVI (version 2.6.17), and goodness-of-fit indices were examined, which indicated an acceptable fit (Hu & Bentler, 1999).

Findings

In line with the purpose of the study, the construct validity and reliability of the scale were examined. The study was conducted in two stages. In the first stage, Exploratory Factor Analysis (EFA) was performed using data obtained from the study group to determine the factor structure of the scale. Subsequently, the internal consistency reliabilities of the resulting sub-dimensions were calculated using the Cronbach's Alpha coefficient. Relationships among the sub-dimensions with confirmed reliability were then examined using Pearson's Product-Moment Correlation Coefficient. In the second stage, Confirmatory Factor Analysis (CFA) was conducted with data from a different sample group to test whether the factor structure identified in the first stage could be confirmed. The results of these analyses are presented below.

Findings Regarding the Exploratory Factor Analysis Process of the ELMPS

At this stage, based on the analysis of the data obtained from the study group, the results regarding the item-total correlations, the discriminative power of the scale items, the suitability of the scale for factor analysis, and the exploratory factor analysis itself are presented sequentially.

All items in the Excellent Leadership in Management Processes Scale are positively worded, and the scale does not contain any reverse-coded items. The scale aims to directly measure teachers'

perceptions of the excellent leadership levels of school administrators in relation to management processes. Initially, to enhance the item quality and internal consistency of the draft scale, item-total correlations were examined. The analysis results indicated that the item-total correlation coefficients for all items were positive and ranged between .55 and .79.

Following this stage, the discriminative power of the items in the scale was examined. For this purpose, the total scores obtained from the scale were used to assess the adequacy of the items in distinguishing teachers with low and high perceptions of excellent leadership. In determining the lower and upper groups, the 27 % cutoff points of the total scores (75th rank) were used, and t-values for each item were calculated (Büyüköztürk, 2021). According to the independent samples t-test results conducted to determine the discriminative power of the items in the Excellent Leadership in Management Processes Scale, the t-values ranged from 9.11 to 19.66, and the differences between the lower and upper 27% groups (n = 75) were found to be statistically significant for all items ($p < .001$). Additionally, the effect sizes of the items were calculated using Cohen's d coefficient. The d values ranged from .48 to 1.04, indicating that, except for a few items with small effect sizes, most items demonstrated medium to large effect sizes.

After determining the discriminative power of the items, the suitability of the scale for factor analysis was examined using the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The analysis yielded a KMO value of .96, indicating that the sample was excellent for factor analysis (Kaiser, 1974). Bartlett's Test of Sphericity was also found to be significant ($\chi^2 = 8456$; $df = 595$; $p < .001$). This finding indicates that there are significant correlations among the variables, sufficient to conduct factor analysis, and that the data are suitable for multivariate analyses (Tabachnick & Fidell, 2019). As a result of the Exploratory Factor Analysis (EFA), in order to obtain a more robust scale, items with factor loadings below .45 (7, 9, 10, 15, 20, 22, 29, 30, 35, 38, 41, 43, 47, 50, 52, 60, 61, 69), items with communalities below .30 (11, 12, 21, 34, 39, 45, 57, 65, 68, 70), and overlapping items with loadings above .10 on multiple factors (6, 8, 19, 26, 40, 51, 56) were systematically removed from the scale, taking theoretical coherence and measurement strength into account. Consequently, a psychometrically strong 35-item scale was obtained, with seven dimensions consisting of five items each (1, 2, 3, 4, 5, 13, 14, 16, 17, 18, 23, 24, 25, 27, 28, 31, 32, 33, 36, 37, 42, 44, 46, 48, 49, 53, 54, 55, 58, 59, 62, 63, 64, 66, 67). Following the literature, the dimensions were named: decision-making, planning, organizing, communication, coordination, influencing, and evaluation. The items were renumbered from 1 to 35 and placed under their respective dimensions (Appendix 1).

Information regarding the exploratory factor analysis of the draft scale is presented in the table below.

Table 1.

Statistical Information Regarding the Exploratory Factor Analysis

Dimensions	Items	Item-Total Correlation	Factor Loading	Explained Variance Ratio	Eigenvalue	Cronbach's Alpha
Decision Making	1	.60	.74	3.35%	1.17	.97
	2	.69	.73			
	3	.71	.68			
	4	.73	.66			
	5	.69	.58			
Planning	13	.66	.71	3.02%	1.05	.97
	14	.67	.67			
	16	.65	.64			
	17	.71	.63			
	18	.67	.61			
Organizing	23	.72	.69	54.70%	19.14	.96
	24	.70	.66			
	25	.73	.64			
	27	.74	.63			
	28	.76	.59			

Communication	31	.71	.69	3.95%	1.38	.96
	32	.73	.65			
	33	.72	.63			
	36	.71	.62			
	37	.75	.58			
Coordination	42	.78	.74	2.88%	1.01	.96
	44	.76	.71			
	46	.72	.63			
	48	.64	.58			
	49	.71	.54			
Influencing	53	.75	.79	2.41%	.84	.97
	54	.55	.64			
	55	.75	.57			
	58	.75	.57			
	59	.76	.46			
Evaluation	62	.73	.69	4.30%	1.51	.96
	63	.79	.68			
	64	.79	.67			
	66	.79	.66			
	67	.76	.59			

Examining Table 1, it was determined that the item-total correlations of the Decision Making sub-dimension items (1, 2, 3, 4, 5) ranged from .60 to .73, the factor loadings ranged from .58 to .74, and the variance explained was 3.35%. For the Planning sub-dimension items (13, 14, 16, 17, 18), the item-total correlations ranged from .65 to .71, the factor loadings ranged from .61 to .71, and the variance explained was 3.02%. For the Organizing sub-dimension items (23, 24, 25, 27, 28), the item-total correlations ranged from .70 to .76, the factor loadings ranged from .59 to .69, and the variance explained was 54.70%. For the Communication sub-dimension items (31, 32, 33, 36, 37), the item-total correlations ranged from .71 to .75, the factor loadings ranged from .58 to .69, and the variance explained was 3.95%. For the Coordination sub-dimension items (42, 44, 46, 48, 49), the item-total correlations ranged from .64 to .78, the factor loadings ranged from .54 to .74, and the variance explained was 2.88%. For the Influencing sub-dimension items (53, 54, 55, 58, 59), the item-total correlations ranged from .55 to .76, the factor loadings ranged from .46 to .79, and the variance explained was 2.41%. For the Evaluating sub-dimension items (62, 63, 64, 66, 67), the item-total correlations ranged from .73 to .79, the factor loadings ranged from .59 to .69, and the variance explained was 4.30%. The common variances of the seven sub-dimensions of the scale were found to range between .68 and .82, with the total variance explained being 74.66%. The eigenvalues of the scale were determined as follows: Decision-Making sub-dimension = 1.17; Planning sub-dimension = 1.05; Organizing sub-dimension = 19.14; Communication sub-dimension = 1.38; Coordination sub-dimension = 1.01; Influencing sub-dimension = .84; and Evaluating sub-dimension = 1.51.

Findings Regarding the Reliability of the ELMPS

In order to determine the reliability of the scale, item–total correlation coefficients for the items and Cronbach's Alpha (α) internal consistency reliability coefficients for the sub dimensions were examined. As a result of the analysis, it is observed that the item–total correlations calculated for the items in each dimension of the scale are at an appropriate level. According to Büyüköztürk (2021), item–total correlation coefficients should be .30 or higher. In order to determine the internal consistency coefficient of the scale, Cronbach's Alpha (α) internal consistency coefficient values were examined. As a result of the analysis, internal consistency coefficients of .97 were obtained for the decision-making, planning, and influencing dimensions, while coefficients of .96 were obtained for the organizing, communication, coordination, evaluation dimensions, as well as for the overall scale (Table 1).

Findings on the Relationships Among the Dimensions of the ELMPS

A Pearson correlation analysis was conducted to examine the relationships between the overall ELMPS and its sub dimensions, and the findings obtained are summarized in Table 2.

Table 2.

Findings on the Relationships Between the ELMPS and Its Dimensions

Dimensions	1	2	3	4	5	6	7	ELMPS
1. Decision Making	1							
2. Planning	.71*	1						
3. Organizing	.69*	.77*	1					
4. Communication	.67*	.69*	.75*	1				
5. Coordination	.68*	.70*	.74*	.78*	1			
6. Influencing	.59*	.53*	.56*	.61*	.62*	1		
7. Evaluation	.70*	.77*	.77*	.77*	.81*	.67*	1	
8. ELMPS	.68*	.62*	.64*	.64*	.64*	.84*	.69*	1

** The p-value is significant at the .01 level.*

When Table 2 is examined, it is observed that there are positive and significant relationships in all sub dimensions and in the overall scale ($p < .01$). The correlations among the sub dimensions range from .53 to .81, with the highest correlation observed between the evaluation and coordination dimensions ($r = .81$; $p < .01$) and the lowest correlation between the influencing and planning dimensions ($r = .53$; $p < .01$). The correlations between the overall scale, which encompasses all management processes, and its sub dimensions range from .62 to .84, with the highest correlation found in the influencing dimension ($r = .84$; $p < .01$) and the lowest in the planning dimension ($r = .62$; $p < .01$). Positive, moderate, and high-level significant relationships were identified between the overall scale and its dimensions.

Findings Related to the Confirmatory Factor Analysis Process of the ELMPS

At this stage, it was examined whether the structure of the ELMPS, revealed through exploratory factor analysis, was confirmed with the data obtained from the sample group. The findings related to the first- and second-order confirmatory factor analyses of the scale are presented below.

Findings Related to the First-Order Confirmatory Factor Analysis

The validity of the seven-dimensional structure emerging from the EFA (Exploratory Factor Analysis) was tested using CFA (Confirmatory Factor Analysis). At this stage, a covariance matrix was created for the dataset consisting of 350 participants. Path diagrams and goodness-of-fit index values were produced for the seven-dimensional, 35-item model. The ratio of the chi-square value to the degrees of freedom was determined to be 1.30 ($\chi^2 = 704$; $df = 539$, $p = 0.00$; $\chi^2/df = 1.30$). The goodness-of-fit index values obtained from the model as a result of the analyses and the criterion values accepted in the literature (Büyüköztürk, 2021; Tavşancıl, 2019; Brown, 2015) are presented comparatively in Table 3

Table 3.

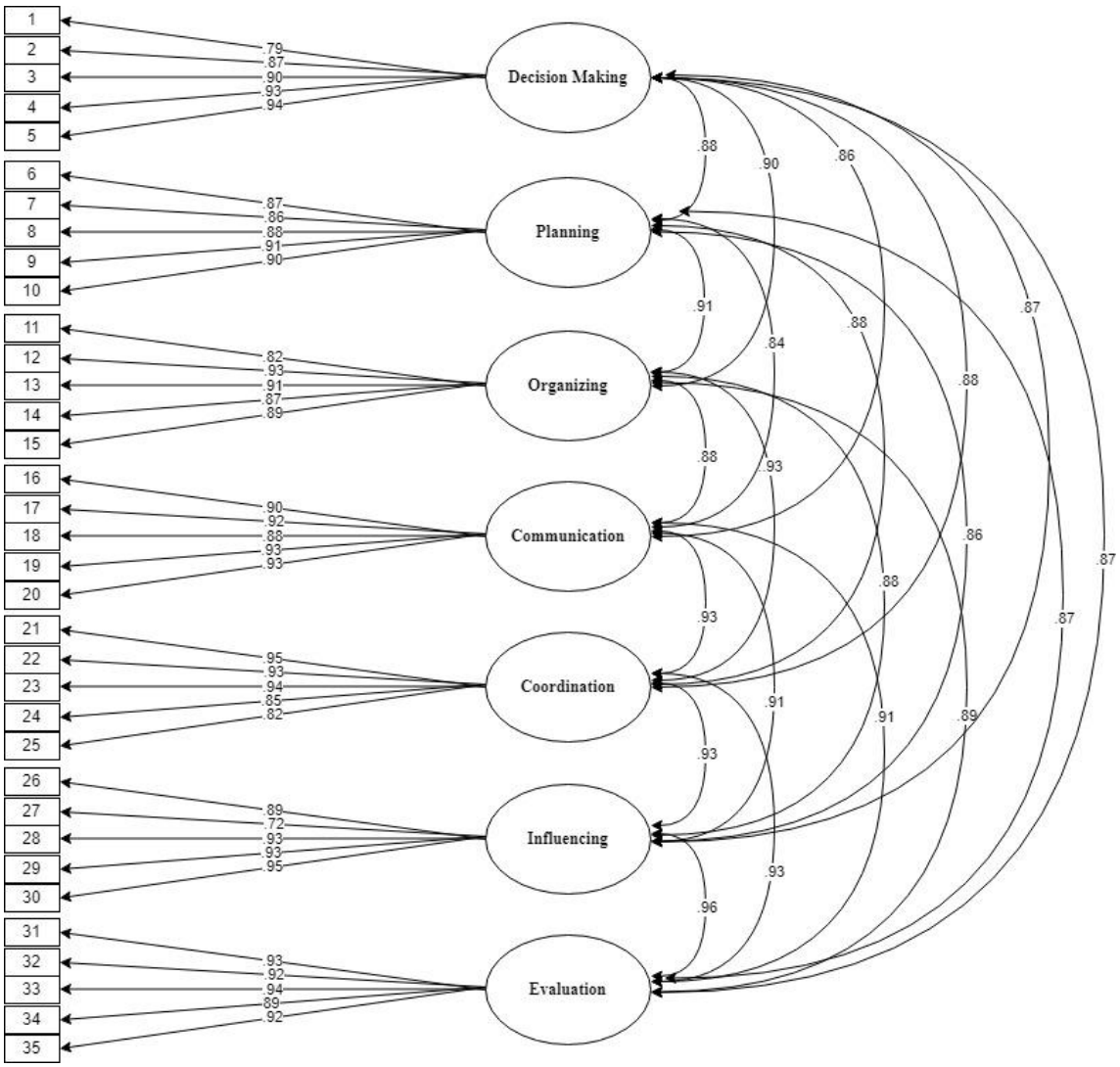
First-Order Goodness-of-Fit Index Values

Fit Measure	Good Fit	Acceptable Fit	Model Fit	
p-value	$.05 \leq p \leq 1.00$	$.01 \leq p \leq .05$	.02	Acceptable
X^2/sd	$.00 \leq X^2/sd < 2.00$	$2.01 \leq X^2/sd \leq 3.00$	1.3	Good
RMSEA	$.00 \leq RMSEA < .05$	$.05 \leq RMSEA \leq .08$	.03	Good
SRMR	$.00 \leq SRMR < .05$	$.05 \leq SRMR \leq .10$	.02	Good
NFI	$.95 < NFI \leq 1.00$	$.90 \leq NFI \leq .95$	.99	Good
CFI	$.97 < CFI \leq 1.00$	$.95 \leq CFI \leq .97$	1.00	Good
GFI	$.95 < GFI \leq 1.00$	$.90 \leq GFI \leq .95$	.99	Good

As shown in Table 3, the first-order confirmatory factor analysis indicates that the 35-item, seven-dimensional structure of the ELMPS demonstrates good and acceptable model fit indices. Based on the findings obtained, the model was confirmed, and the path diagram related to the model is presented in Figure 1.

Figure 1

Path Analysis Diagram of the First Order Model



When the standardized coefficients of the model presented in Figure 1 are examined, it is observed that the relationships of the decision-making dimension with the observed variables range from .79 to .94, the planning dimension from .86 to .91, the organizing dimension from .82 to .93, the communication dimension from .88 to .93, the coordination dimension from .82 to .95, the influencing dimension from .72 to .95, and the evaluation dimension from .89 to .94. The standardized coefficients among the latent variables were found to range from .84 to .94.

Findings Related to the Second-Order Confirmatory Factor Analysis

A second-order confirmatory factor analysis (CFA) was conducted on the Scale of Excellent Leadership in Management Processes, the seven-dimensional structure of which had been confirmed through first-order CFA results. Second-order CFA is applied to examine subfactors, strengthen the model, test validity, and analyze multiple constructs simultaneously (Henson & Roberts, 2006). In the model developed using JAMOVI software, seven subfactors formed by the observed variables-decision making, planning, organizing, communication, coordination, influencing, and evaluation-were linked to a higher-order factor (excellent leadership in management processes), and path diagrams along with goodness-of-fit indices were generated. The ratio of chi-square to degrees of freedom was found to be 1.64 ($\chi^2 = 909$; df = 553, p = 0.00; $\chi^2/df = 1.64$). The goodness-of-fit indices obtained from the model and the threshold values accepted in the literature (Büyüköztürk, 2021; Tavşancıl, 2019; Brown, 2015) are presented comparatively in Table 4.

Table 4.

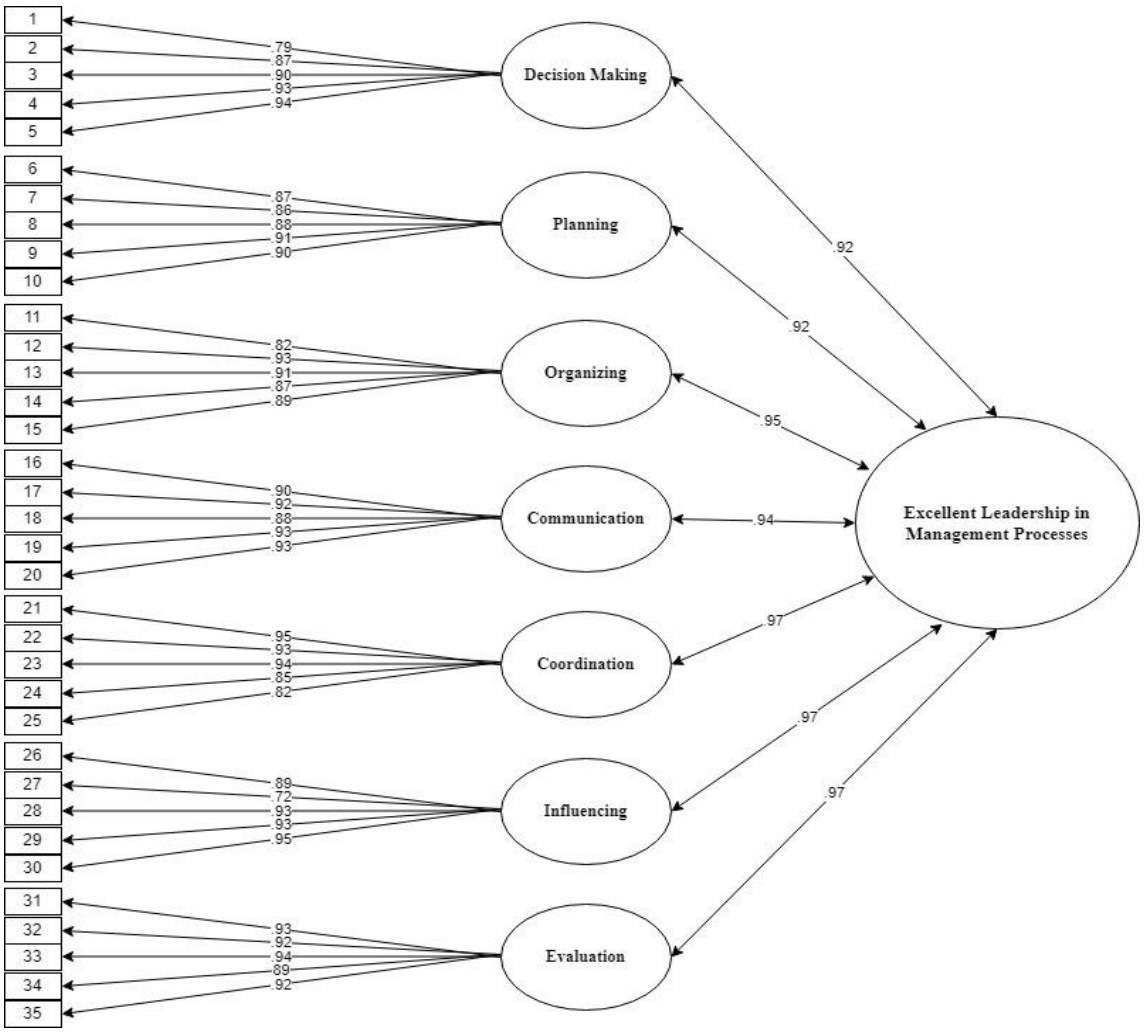
Second-Order Fit Index Values

Fit Measure	Good Fit	Acceptable Fit	Model Fit	
p-value	.05≤ p ≤ 1.00	.01 ≤ p ≤ .05	.03	Acceptable
X^2/sd	.00 ≤ X^2/sd < 2.00	2.01 ≤ X^2/sd ≤ 3.00	1.64	Good
RMSEA	.00 ≤ RMSEA < .05	.05 ≤ RMSEA ≤ .08	.03	Good
SRMR	.00 ≤ SRMR < .05	.05 ≤ SRMR ≤ .10	.04	Good
NFI	.95 <NFI ≤ 1.00	.90 ≤ NFI ≤ .95	.99	Good
CFI	.97 <CFI ≤ 1.00	.95 ≤ CFI ≤ .97	.99	Good
GFI	.95 <GFI ≤ 1.00	.90 ≤ GFI ≤ .95	.99	Good

As seen in Table 4, the structure of the ELMPS, consisting of 35 items and seven dimensions, demonstrates good and acceptable levels of fit indices in the second-order confirmatory factor analysis following the proposed modifications. The path diagram for the validated seven-factor model is presented in Figure 2.

Figure 1.

Path Analysis Diagram for of the Second-Order Model



When examining the standardized coefficients of the model in Figure 2, the latent variable of excellent leadership in management processes is associated with the decision-making dimension at .92 (item factor loadings ranging from .79 to .94), the planning dimension at .92 (item factor loadings ranging from .86 to .91), the organizing dimension at .95 (item factor loadings ranging from .82 to .93), the communication dimension at .94 (item factor loadings ranging from .88 to .93), the

coordination dimension at .97 (item factor loadings ranging from .82 to .95), the influencing dimension at .97 (item factor loadings ranging from .72 to .95), and the evaluation dimension at .97 (item factor loadings ranging from .89 to .94).

Findings on the Reliability of the ELMPS

Information regarding the reliability of the scale is presented in Table 5 below.

Table 5

Cronbach's Alpha Values

Dimensions	Items	Item-Total Correlation Coefficient	Cronbach's Alpha (α)
Decision Making	1	.70	.92
	2	.76	
	3	.78	
	4	.81	
	5	.83	
Planning	6	.77	.92
	7	.76	
	8	.78	
	9	.80	
	10	.81	
Organizing	11	.74	.93
	12	.85	
	13	.84	
	14	.77	
	15	.80	
Communication	16	.82	.94
	17	.84	
	18	.81	
	19	.85	
	20	.83	
Coordination	21	.89	.93
	22	.85	
	23	.87	
	24	.78	
	25	.74	
Influencing	26	.82	.93
	27	.63	
	28	.87	
	29	.85	
	30	.87	
Evaluation	31	.87	.95
	32	.86	
	33	.88	
	34	.84	
	35	.87	
Overall Scale			.98

As shown in Table 5, the item–total correlation coefficients for the items and the Cronbach's Alpha (α) internal consistency reliability coefficients for the subdimensions were examined. The analysis revealed that the item–total correlations for each item in the scale ranged as follows: .70 to .83 for the decision-making dimension, .76 to .81 for the planning dimension, .74 to .85 for the organizing dimension, .81 to .85 for the communication dimension, .74 to .89 for the coordination dimension, .63 to .87 for the influencing dimension, and .84 to .88 for the evaluation dimension. Item–total correlations should be .30 or higher (Büyüköztürk, 2021). The Cronbach's Alpha values assessing the internal consistency reliability of the data obtained from the scale were calculated as follows: .98 for the overall scale, .92 for the decision-making and planning dimensions, .93 for the organizing,

coordination, and influencing dimensions, .94 for the communication dimension, and .95 for the evaluation dimension.

Discussion and Conclusion

In this study, a scale was developed to determine the level of excellent leadership in management processes of school administrators working in public lower secondary schools from teachers' perspectives. The research was conducted in two stages with two different samples. In the first stage, the construct validity of the draft scale was examined using data from the initial sample, while in the second stage the final structure was validated using a separate sample. The scale development process followed established psychometric procedures, including literature review, item pool generation, expert evaluation, pilot testing, and validity and reliability analyses (Büyüköztürk, 2021; Can, 2016; DeVellis, 2017; Karasar, 2024; Tavşancıl, 2019; Kline, 2016).

In the first stage, relevant literature and existing measurement tools on management processes were reviewed (Kıral & Başaran, 2024; Ebabil, 2015; Gül, 2017; Kasım, 2008; Kuğuoğlu, 1997), resulting in an initial pool of 210 items. Following expert reviews from academics and practitioners in educational administration, as well as feedback from language specialists, the item pool was refined. The initial version of the "Scale of Excellent Leadership in Management Processes" (ELMPS) was structured with seven dimensions—decision making, planning, organizing, communication, coordination, influencing, and evaluation (Bursalıoğlu, 2024; Kıral & Deliveli, 2019)—and 84 items in total. After language revisions, the draft form was finalized.

Content and face validity were ensured through expert judgment (Karasar, 2024; Kaptan, 1998). Based on expert feedback, the scale was reduced to 70 items, with 10 items per dimension. The Lawshe technique was applied to assess content validity, and the Content Validity Ratio (CVR) was calculated (Lawshe, 1975). Twelve experts participated in the evaluation, and items exceeding the critical CVR value of .49 were retained (Yurdugül, 2005). The Content Validity Index (CVI) of the scale was calculated as .86, indicating satisfactory content validity.

Data were collected from 281 valid responses, which was considered sufficient for psychometric analyses (Büyüköztürk, 2021; Tabachnick & Fidell, 2019). Item analysis results showed item-total correlations ranging between .51 and .79, indicating adequate item discrimination and internal consistency. Independent samples t-tests comparing the upper and lower 27% groups revealed statistically significant differences for all items, with effect sizes ranging from medium to large (Cohen, 1988).

Prior to factor analysis, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity confirmed sampling adequacy and factorability of the data (Kaiser, 1974; Tabachnick & Fidell, 2019). Exploratory Factor Analysis (EFA) was conducted using Varimax rotation, an orthogonal rotation method that maximizes factor interpretability by producing uncorrelated factors. Items with factor loadings below .45, communalities below .30, or cross-loadings exceeding .10 were excluded. The final structure consisted of 35 items distributed across seven factors, explaining 74.66% of the total variance. Although one factor had an eigenvalue below 1, it was retained due to its theoretical relevance (DeVellis, 2017; Field, 2024).

Reliability analyses indicated very high internal consistency, with Cronbach's Alpha coefficients of .96 for the overall scale and between .96 and .97 for the sub dimensions (Tavşancıl, 2019). Pearson correlation analyses demonstrated significant positive relationships among the sub dimensions, supporting the multidimensional yet coherent structure of the scale.

In the second stage, the factorial structure was tested using a separate sample of 350 teachers. The data met normality assumptions, and no outliers were detected. First-order Confirmatory Factor Analysis (CFA) confirmed that the 35-item, seven-factor model demonstrated acceptable to good fit indices. Standardized factor loadings indicated strong relationships between observed variables and latent constructs (Brown, 2015).

A second-order CFA further supported the hierarchical structure of the scale, showing that all seven dimensions loaded significantly onto a higher-order construct representing excellent leadership

in management processes. Model fit indices confirmed that the theoretical structure was well supported.

Reliability analyses for the second sample also confirmed high internal consistency across all dimensions and the overall scale, indicating that the instrument is stable and reliable for both research and practical use.

In conclusion, both exploratory and confirmatory analyses provided strong evidence for the validity and reliability of the developed scale. The results indicate that the instrument can be used as a psychometrically sound tool in educational administration research. Future studies across different educational levels are recommended to further support its generalizability.

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Ek 1.

Scale of Excellent Leadership in Management Processes

	Please prepend the phrase "My school principal" to the beginning of each scale item when responding.	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
1	Includes all relevant individuals in the decision-making process.	1	2	3	4	5
2	Demonstrates a democratic attitude in the decision-making process.	1	2	3	4	5
3	Makes the best use of the information available in the decision-making process.	1	2	3	4	5
4	Selects the most appropriate alternative regarding the decision.	1	2	3	4	5
5	Acts ethically when making decisions.	1	2	3	4	5
6	Conducts a needs analysis when planning.	1	2	3	4	5
7	Makes flexible plans to ensure continuity.	1	2	3	4	5
8	Considers the school's strategic goals during planning.	1	2	3	4	5
9	Uses resources in the best possible way when planning.	1	2	3	4	5
10	Plans with the school's vision in mind.	1	2	3	4	5
11	Assigns personnel according to job descriptions.	1	2	3	4	5
12	Acts fairly in personnel assignments.	1	2	3	4	5
13	Creates a hierarchy that ensures tasks are carried out effectively.	1	2	3	4	5
14	Divides the work to be done at school into sections.	1	2	3	4	5
15	Assigns personnel based on their competencies.	1	2	3	4	5
16	Has verbal communication skills.	1	2	3	4	5
17	Has empathy skills.	1	2	3	4	5
18	Uses body language effectively.	1	2	3	4	5
19	Follows an open-door policy in communication.	1	2	3	4	5
20	Has effective listening skills.	1	2	3	4	5
21	Ensures coordination appropriate to the structure of the school.	1	2	3	4	5
22	Prioritizes activities that enhance collaboration within the school.	1	2	3	4	5
23	Ensures the effective participation of all stakeholders in the functioning of education and teaching.	1	2	3	4	5
24	Keeps personnel informed about each other’s work.	1	2	3	4	5
25	Monitors the activities carried out.	1	2	3	4	5
26	Uses intellectual capital effectively.	1	2	3	4	5
27	Influences personnel by using charisma.	1	2	3	4	5
28	Serves as a role model for employees through behavior.	1	2	3	4	5
29	Influences stakeholders by using expertise.	1	2	3	4	5
30	Uses communication skills to influence stakeholders.	1	2	3	4	5
31	Conducts a preliminary meeting with staff before proceeding to the evaluation process.	1	2	3	4	5
32	Uses different evaluation methods to determine the current situation.	1	2	3	4	5
33	Develops the current situation together with stakeholders.	1	2	3	4	5
34	Encourages staff to conduct self-evaluation.	1	2	3	4	5
35	Views evaluation as a developmental process.	1	2	3	4	5