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Designing and Explaining the Professional Development Model for Preschool Educational Managers in Education: A Mixed Method Study

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ABSTRACT

Objective: This investigation was undertaken with the objective of formulating and elucidating a process model pertaining to the professional development of preschool educational administrators within the domain of education.

Methods: This study uses a mixed-methods approach (qualitative-quantitative) to explore educational management. The qualitative phase involved in-depth, unstructured interviews with 11 experts (educational administrators, scholars, and HR consultants) using snowball sampling until theoretical saturation was reached. Grounded theory guided the model construction. The quantitative phase surveyed 217 preschool managers in Tehran and Qom provinces via a 42-item researcher-developed questionnaire, analyzed using SPSS and smart-PLS software. The study integrates qualitative insights with quantitative data to develop a comprehensive model, employing convenience sampling for the quantitative segment and grounded theory for qualitative analysis.

Results: Ultimately, the findings of this research resulted in the formulation of a process model for the professional development of preschool educational administrators in education (anchored in the paradigm model structure), and the hypothesized relationships derived from the model were empirically tested and validated within a substantial population.

Conclusions: The results may provide valuable insights for educational administrators and planners in the formulation and execution of a procedural framework aimed at the professional development of preschool educational managers.

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Introduction

The efficacy of the educational system, administered by educational leaders, holds significant importance not only in relation to economic and social advancement but also possesses critical implications for job mobility and aspirations (Gkolia et al., 2018). Education is widely regarded as the preeminent vehicle for instilling values and modifying behaviors, facilitating individuals in their capacity to deliver social and economic contributions, secure employment, and ultimately achieve personal satisfaction commensurate with their abilities and ambitions. Furthermore, education is deemed invaluable and critical concerning the diverse roles and functions it fulfills within society, encompassing areas such as acculturation and socialization (Shaidullina et al., 2017).

With the expansion and evolution of educational systems, there arises not only a necessity for transformation in educational policymaking and administration but also an increasing focus on the economics of education, along with its efficiency, effectiveness, and resultant implications (economic development, scientific advancement, human capital enhancement, societal welfare, and health improvements, among others) among experts, planners, and educational system officials. Consequently, in light of the significance of education, its effects, and ramifications, the substantial human and material resources allocated to it are not being leveraged with optimal effectiveness and efficiency. These challenges, coupled with the low returns on investment, necessitate a thorough reevaluation of the management across various tiers of the educational system (including preschool education). Thus, to realize a high-quality and effective educational framework, it is imperative to implement developmental initiatives throughout the educational system, particularly focusing on enhancing educational management (Tahvildarzadeh et al., 2017). The concept of encompasses a holistic, supportive, and targeted methodology aimed at augmenting the efficacy of educators and school administrators in fostering student development and achievement (Ameri et al., 2024; Avidov-Ungar, 2016; Hirsh, 2009). If the role of school leadership is deemed vital, it is essential to scrutinize the manner in which school administrators acquire the skills necessary to execute their responsibilities effectively, thereby contributing to student learning (Stynes & McNamara, 2019). The professional development of school leaders represents a critical necessity for success in their professional capacities (Bacheler, 2015). In contemporary discourse, there is an increasing acknowledgment of the significance of school

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leadership in facilitating potential reforms and enhancing educational quality (Kythreotis & Pashiardis, 2006; Waters et al., 2004). In this context, specific principles and methodologies must be employed to revamp educational systems and cultivate reflective, innovative, and entrepreneurial human resources. Consequently, historical models and frameworks are inadequate for this objective. The paramount factor in the transformation of educational systems is the need to shift the perspectives of educators regarding the instructional process and the performance of administrative leaders within the educational framework (Aghazadeh, 2022).

The professional development of school principals constitutes the cornerstone and foundation of educational advancement, as leadership within schools exerts a direct influence on learners and plays a pivotal role in enhancing the quality of student learning outcomes (Brown & Militello, 2016). It is evident that the professional development of school principals serves as a mechanism for the sustenance and enhancement of school effectiveness (Ibrahim, 2011).

Naderi et al. (2020) undertook an empirical investigation entitled Identifying the Professional Development Components of Primary Education Managers in Qom Province. The outcomes derived from this research delineated professional development components categorized into 11 distinct domains, which encompass the enhancement of scientific competencies, the diversification of the educational environment, the assessment of needs, the advancement of communication skills, the empowerment of personnel, engagements in internal and external visits, the formulation of strategic plans, the rejuvenation of educational practices, the commitment to lifelong learning, conflict management, and the establishment of an equilibrium between professional and personal life. Each of these domains was further associated with specific codes and conceptual frameworks.

Khodabandelou et al. (2019) authored an article entitled Analytical Study of Professional Development in Preschool Education. The results of this investigation revealed that among the top five universities recognized for their contributions to interaction in online learning environments, four are situated within Asia, with Indiana University being the first American institution to rank, positioned sixth among universities noted for substantial knowledge production. Nonetheless, it is evident that the United States retains the predominant share in knowledge production across various academic disciplines.

Hayat et al. (2016) performed a qualitative study entitled "Qualitative Study of Professional Development Needs and Methods of School Principals." The outcomes of this investigation

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revealed that the professional development necessities of secondary school principals encompass five primary categories: educational leadership, management and organizational leadership, ethical leadership, social participation, and technology. Farzaneh et al. (2015) conducted a study titled "Providing a Model of Professional Competencies for Secondary School Principals." The conclusions drawn from this research illustrated that the professional competencies requisite for secondary school principals comprise four principal components: psychological characteristics, skills, knowledge, and attitudes. Reston (2015) elucidated in his research that the paramount professional standards for school administrators within the professional development program entail the following: mission, vision, and core values of educational leadership, ethical considerations and adherence to professional standards, organizational justice and accountability, educational and curricular programs, methodologies for training and assessment, the process of nurturing and supporting students, enhancement of the professional capabilities of school personnel, the development of professional programs for educators and staff, engagement with and utilization of the resources of families and school-related associations, research orientation, and fidelity to the principles of comprehensive school management and improvement. In their scholarly inquiry, Ng and Szeto (2016) discerned that within the professional development program for school principals, aspects such as interpersonal skills, crisis management, appropriate resource management, and familiarity with educational regulations are prioritized. They also advocated in their study that the learning initiatives for principals should concentrate on the specific needs of these leaders, content requirements, and the multidimensionality of the methodologies employed. Militello et al. (2013), in their investigation entitled “How Professional Standards Are Applied to School Principal Performance,” deduced that three principal dimensions of professional standards exerted a substantial influence on principal performance, elucidating 38 percent of the variance in the professional efficacy of principals. These dimensions comprised the principals’ emphasis on collective participation, organizational policy orientation, and the cultivation of insight and self-awareness. Bizzell (2011), in his doctoral dissertation titled “Professional Development of School Principals in the State of Virginia,” determined that the professional development initiatives for elementary, middle, and high school principals within this jurisdiction were characterized by a low level of continuity and advancement, an average level of relevance to school and district objectives, and a superior level concerning the institutionalization

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of professional development. Furthermore, this research identified the predominant obstacles to the professional development of principals as the insufficiency of professional development opportunities offered by the school or district, the scarcity of professional development knowledge accessible to principals, and geographical constraints. Ibrahim (2011) recognized in his study the pivotal factors facilitating the professional development of principals as resources and financial support, tailored programs and support for principals, availability of in-service training, stakeholder backing, the principal's role as an educational leader, and the daily challenges encountered. Additionally, the most significant deterrents to the professional development of principals included insufficient experience, limited in-service periods, scarcity of resources and finances, barriers imposed by decision-making powers, inadequate knowledge, familial issues, and a lack of time. Wallace (2009), in a study entitled "Modeling the Impact of Principals' Professional Development on Teacher Performance and Student Success," discovered that the professional development of principals has a direct influence on teacher performance and an indirect effect on student success and improved learning outcomes. Scher and O'Reilly (2009) scrutinized the effect of professional development on teacher knowledge, skills, and student success in their research endeavors. The results of their inquiry substantiated the positive influence of professional development programs on enhancing teacher knowledge and skills and ultimately contributing to student success.

The professional development of school principals can be approached through two modalities: the rational-technical approach and the practical-feedback approach. The rational-technical paradigm posits that the expertise and competencies possessed by managerial personnel constitute the paramount elements in their professional advancement, as the professional growth of managers is frequently augmented by the acquisition of knowledge and skills, particularly in relation to educational and specialized domains. In the subsequent framework, it is posited that an intermediary form of knowledge exists between theoretical constructs and practical application, termed the applied-feedback approach, which significantly influences the professional development of educators and school leaders (Han & Feng, 2013). School administrators who possess the requisite professional qualifications are positioned to guide educational institutions in a manner that establishes the foundational elements for the evolution of the educational system. Indubitably, the advancement of education is contingent upon the cultivation of human resources.

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As previously noted, the most consequential human resource impacting other components of the educational system comprises school administrators; thus, the professional development of these individuals lays the groundwork for the realization of the educational system's objectives concerning development. Therefore, through the design and execution of a developmental process, educational leaders will embody the attributes necessary for professionalism and will exhibit enhanced professional efficacy.

It is unequivocal that the core of personality is fundamentally established during the preschool years. The preschool period represents one of the most critical phases for the growth and maturation of human personality. This phase is characterized by significant attributes. Consequently, all leading nations globally in the field of education possess a distinct perspective regarding this age and educational stage. Initial surveys conducted within the realms of education and training, along with preliminary informal interviews with senior administrators from this organization, have revealed that, notwithstanding the substantial significance and necessity of enhancing the professional development of preschool educational managers within this region, no comprehensive investigations have been undertaken thus far, and the organization in question lacks a defined model for progress in this domain. Hence, the present research endeavors to address the following principal inquiry through the formulation of a systematic methodology: "What constitutes the professional development model for preschool educational administrators in the educational sector?"

Material and Methods

The current study is categorized as applied with respect to its objectives and as exploratory in relation to its methodological framework. It is important to highlight that this investigation was executed in two overarching phases:

Phase 1: Development of a process model for the professional advancement of preschool educational administrators within the educational sector. (Qualitative approach: grounded theory).

Phase 2: Validation and elucidation of a process model for the professional advancement of preschool educational administrators within the educational sector. (Quantitative approach: structural equation modeling).

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Population of the research

In the qualitative segment of the study, the population comprised a cohort of experts, including senior educational administrators, university academics specializing in educational management, and distinguished consultants in human resources. The requisite criteria for expertise encompassed proficiency in the domain of educational manager development and the management framework within preschool education. In the quantitative segment of the research, a statistical population was requisite for model fitting. Consequently, all preschool educational administrators in the provinces of Tehran and Qom were designated as the population. According to the data acquired in September 2022, the size of this statistical population was ascertained to be 500 individuals.

In the qualitative segment of the research, the snowball sampling technique was employed. Initially, the first expert was selected based on preliminary investigations and consultations with the esteemed supervisor, and upon concluding the interview with the initial participant, they were requested to refer another individual or individuals (from the statistical population) who could be deemed experts in the realm of professional development for preschool educational managers, thereby enriching the research model. This iterative process persisted until the researcher attained theoretical saturation. It is noteworthy that 11 interviews were conducted throughout this research. In the quantitative phase, all preschool educational managers were acknowledged as the population, and the compiled statistics indicated their number to be 500 individuals. According to the Krejci and Morgan table, for a population of this magnitude, a minimum of 217 statistical samples was deemed necessary. In this investigation, sampling was executed utilizing the convenience sampling method.

Data collection tools

In the qualitative phase of the research, given the application of the grounded theory approach, the primary instrument for data collection was in-depth and unstructured interviews with marketing specialists. During these interviews, the researcher endeavored to engage in a subtle manner and establish initial trust with the interviewees, indirectly posing inquiries regarding the antecedents, contextual factors, and implications of professional development for preschool educational managers in education, thereby facilitating the extraction of foundational concepts for model development. In the quantitative segment of the study, the principal instrument for data collection was a closed-ended questionnaire, meticulously crafted by the researcher and comprising 42 items,

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which was constructed in accordance with the foundational conceptual framework. It is noteworthy to state that the responses within this questionnaire were formulated utilizing a five-point Likert scale, accompanied by a "degree of agreement" scale. The configuration of this questionnaire, reflective of its diverse dimensions, is delineated in Table 1.

Table 1. Configuration of the quantitative segment of the research questionnaire

Variable	Items
Causal factors	1-9
Preschool educational managers' strong commitment to professional development	10-13
Contextual and environmental factors	14-25
Intervening factors	26-31
Strategic factors	32-34
Consequences	35-42

Data analysis methods

In the qualitative segment of the investigation, the grounded theory methodology was employed, utilizing a tripartite coding system (open, axial, and selective) to facilitate the derivation of the research's conceptual model. In the quantitative segment of the investigation, the statistical software SPSS and smart-PLS were utilized for data analysis and the evaluation of research hypotheses, incorporating descriptive statistical measures (mean, standard deviation, frequency, etc.) along with inferential statistical tests (Cronbach's alpha, construct validity, confirmatory factor analysis, and path analysis).

Results

Qualitative phase (design of initial model with grounded theory approach)

Within the framework of this investigation, a comprehensive total of 11 interviews were conducted, resulting in the extraction of 130 preliminary concepts. Following a meticulous analysis and synthesis of these concepts, as well as the elimination of redundancies, 38 definitive concepts were delineated. Subsequently, an effort was undertaken to formulate broader classifications, herein referred to as "categories," by meticulously scrutinizing the identified concepts and discerning their respective similarities and differences, thereby organizing analogous and congruent concepts within these overarching categories. The culmination of this methodological process yielded the identification of 14 principal categories. In the subsequent

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phase, the identified categories were integrated into the structural framework of the paradigm model (Figure 1).

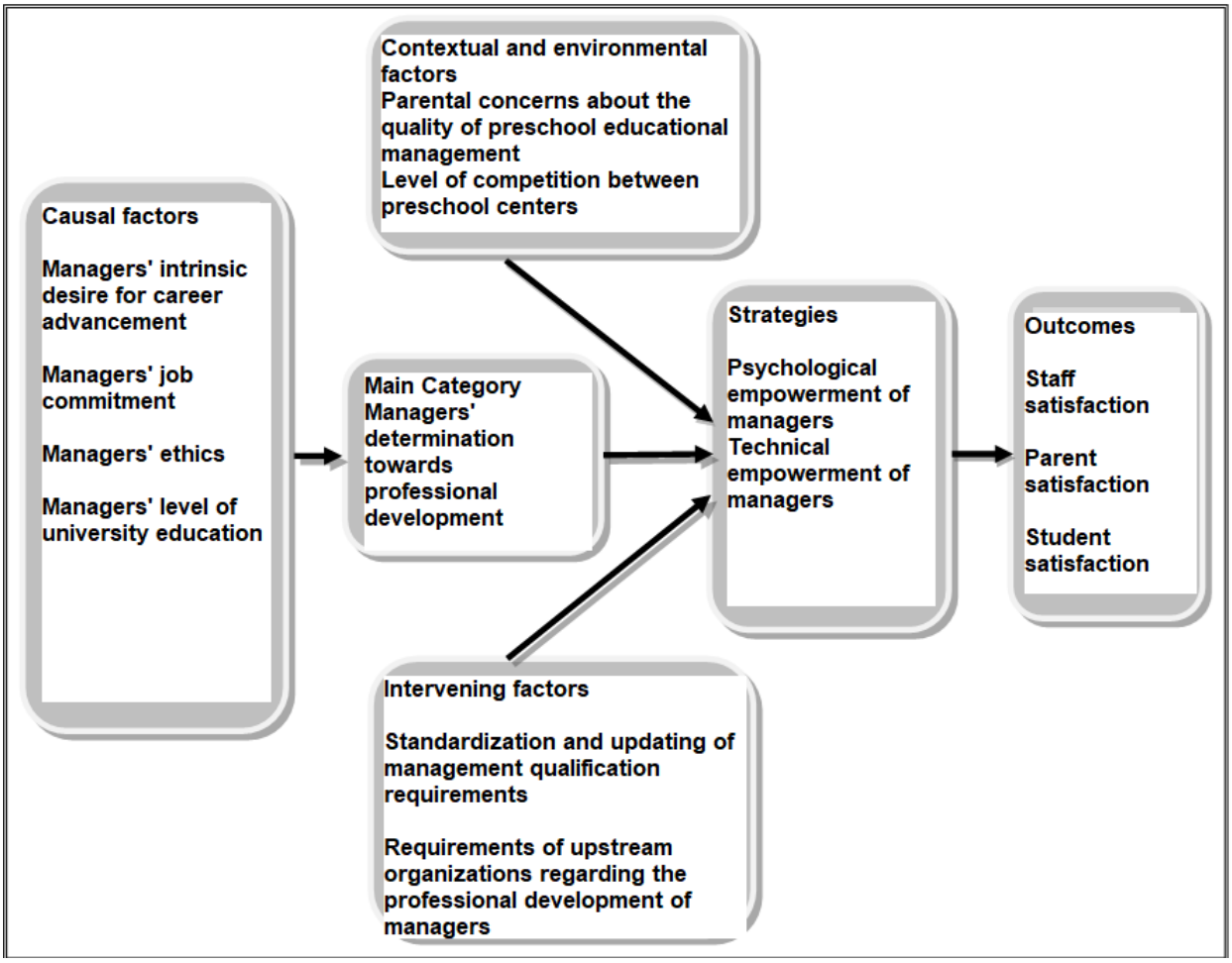


Figure 1. Integration of categories within the structural framework of the paradigm model

Based on the figure 1, the conceptual model of the research was articulated as represented in Figure 2.

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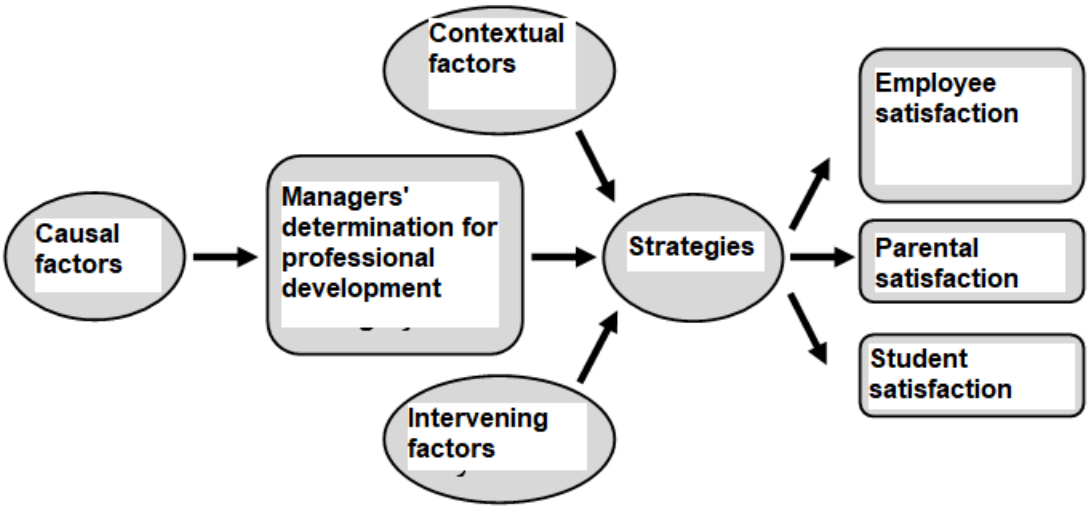


Figure 2. Conceptual model of the research

In accordance with the above model, the research hypotheses were articulated as follows:

(1). Causal factors exert a significant influence on the professional development determination of preschool educational administrators.

(2). The determination of preschool educational administrators towards professional development significantly impacts strategic factors.

(3). Contextual and environmental factors exert a significant influence on strategic factors.

(4). Intervening factors have a significant impact on strategic factors.

(5). Strategic factors significantly influence the satisfaction levels of preschool (educational/administrative) personnel.

(6). Strategic factors significantly affect parental satisfaction.

(7). Strategic factors significantly influence student satisfaction.

Quantitative phase (explanation of the research model with the structural equation modeling approach):

A variety of criteria are employed to evaluate the fit of structural models, with the primary criterion for assessing the interrelationships among the structures in the model being the criterion of significant t-values or t-numbers; these values must exceed (+1.96) or fall below (-1.96) to substantiate the validity of the relationships between the constructs and the research hypotheses at

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a 95% confidence level (Figure 3). It is imperative to note that the intensity of the relationships between the constructs is illustrated in Figure 4**.**

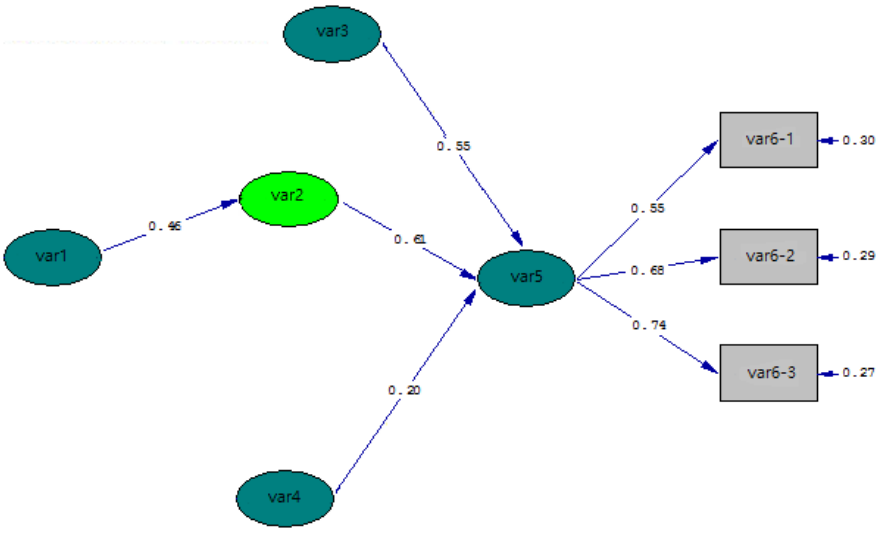


Figure 3. The fitted research model in the standard mode

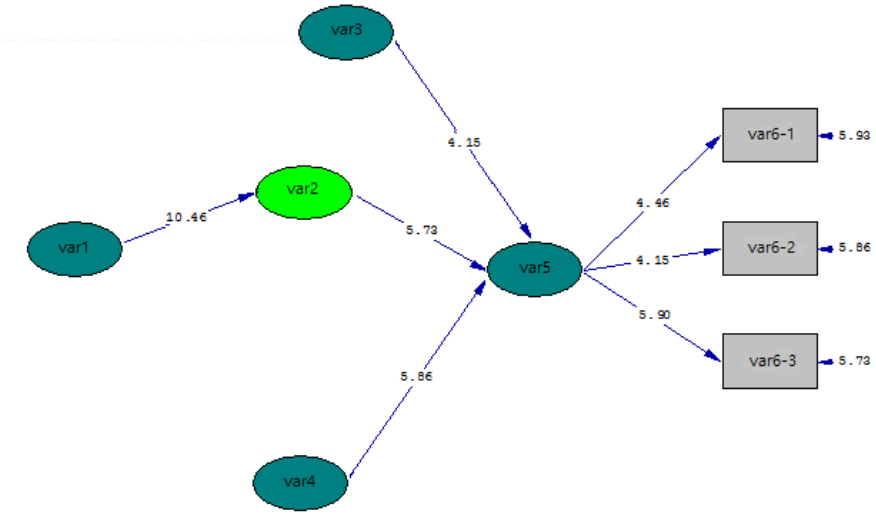


Figure 4. The fitted research model in the significant mode

According to the software output presented in Table 2, the value of the root mean square residual (RMSEA) is 0.069. The goodness of fit index (GFI) is recorded at 0.976, the adjusted goodness of fit index (AGFI) is 0.92, the comparative fit index (CFI) is 0.928, the normalized Bentler-Bonnet fit index (NNFI) is 0.95, and the incremental fit index (IFI) is 0.93.

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Table 2. Conceptual Model Fit Indices

Fit indices	Optimal value	Model value
χ^2/DF	< 3	1.77
GFI (Goodness of Fit Index)	> 0.90	0.97
AGFI(Adjusted Goodness of Fit Index)	> 0.90	0.92
RMR(Root Mean square Residual)	< 0.05	0.034
NFI (Normed Fit Index)	> 0.90	0.97
Parsimony Normed Fit Index (PNFI)	> 0.50	0.93
NNFI (Non-Normed Fit Index)	> 0.90	0.95
IFI(Incremental Fit Index)	> 0.90	0.93
CFI (Comparative Fit Index)	> 0.90	0.92
RMSEA(Root Mean Square Error of Approximation)	< 0.08	0.069

The significance coefficients associated with the model pathways serve to elucidate the degree of significance of the research hypotheses. Should the significance coefficient of the pathway linking two variables exceed 1.96 or fall below -1.96, this denotes that the influence of these two variables is statistically significant at the 95% confidence threshold, thereby corroborating the hypothesis. Table 3 presents a synthesis of the significance coefficients along with the outcomes pertaining to the proposed hypotheses.

Table 3. Results of testing the research hypotheses

Hypothesis	Beta	P	Result
Causal factors have a significant effect on the determination of preschool educational managers towards professional development.	0.46	0.001	confirmed
The determination of preschool educational managers towards professional development has a significant effect on strategic factors.	0.61	0.001	confirmed
Contextual and environmental factors have a significant effect on strategic factors.	0.55	0.001	confirmed
Intervening factors have a significant effect on strategic factors.	0.20	0.001	confirmed
Strategic factors have a significant effect on the satisfaction of preschool (educational/administrative) staff.	0.55	0.001	confirmed
Strategic factors have a significant effect on the satisfaction of parents.	0.68	0.001	confirmed
Strategic factors have a significant effect on the satisfaction of students.	0.74	0.001	confirmed

Discussion

In the qualitative segment of the current investigation, a systematic approach was undertaken to incrementally progress towards the formulation of a conceptual model pertinent to the research by executing comprehensive interviews with a cohort of specialists, which encompassed senior educational administrators, university academics specializing in educational management, and distinguished consultants within the realm of human resources, alongside the application of grounded theory methodology. In pursuit of this objective, a total of eleven detailed interviews

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were conducted. Throughout these interviews, efforts were made to frame inquiries in a manner that would mitigate the potential for respondent bias. It is noteworthy that subsequent to each interview, the researcher meticulously reviewed the transcribed interview text multiple times, thereby identifying preliminary concepts, which were subsequently extracted and coded. Commencing from the ninth interview, the emergence of novel and original concepts from the interview text became negligible, leading the researcher to attain theoretical saturation. Following the processes of open, axial, and selective coding, a conceptual model for the research, derived from the paradigmatic model, was ultimately established, resulting in the formulation of seven hypotheses congruent with it. To scrutinize the research hypotheses, a researcher-developed questionnaire was initially constructed, subsequently followed by the collection of requisite data from an extensive statistical population comprising all preschool educational administrators in the Tehran and Qom provinces, which were then analyzed utilizing the path analysis methodology. According to the quantitative phase of the study, all seven research hypotheses, and consequently the conceptual framework of the research, received empirical validation.

Based on the findings, the nucleus of the research framework was constituted by the delineation of preschool educational administrators' commitment to professional development. Within this pivotal variable, elements such as goal establishment, planning, and actionable strategies undertaken by educational managers towards their professional advancement were encapsulated. Four salient causal factors exert a direct influence on this nucleus, which include the intrinsic aspiration of preschool educational administrators for career progression, their organizational commitment to the preschool settings they oversee, their adherence to ethical standards in professional conduct, and the adequacy of their academic qualifications in relation to preschool education. This indicates that the internal motivations and aspirations of educational managers for career progression, their extent of organizational allegiance to the preschool institutions they manage, their commitment to ethical standards in their professional behaviors and decision-making processes, as well as their educational background and the relevance of their field of study to preschool education, can profoundly and meaningfully contribute to fostering a more resolute and determined focus on professional development.

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The findings of the research indicate that both psychological and technical empowerment of preschool educational administrators can facilitate significantly beneficial outcomes, including enhanced satisfaction among preschool educational and administrative staff, parents, and students. Furthermore, the research substantiates that contextual and environmental factors, along with pivotal intervening variables—such as parental apprehension regarding the caliber of preschool educational administration, the competitive dynamics among preschool institutions, the standardization and continual updating of qualifications for preschool educational leaders, and the stipulations imposed by overarching organizations concerning the professional development of preschool educational managers—also contribute to the research framework and may exert a direct influence on the strategies delineated within the model.

It is imperative to acknowledge that the findings of this investigation align with the outcomes reported in a variety of prior studies, including but not limited to those conducted by Naderi et al. (2020), Khodabandelou et al. (2019), Farzaneh et al. (2015), Reston (2015), Ng and Szeto (2016), Militello et al. (2013), Ibrahim (2011), and Scher and O'Reilly (2009).

Drawing from the insights gleaned from both the qualitative and quantitative components of the study, several recommendations can be posited to augment the professional development trajectory of preschool educational managers:

• Candidates exhibiting a natural propensity for career advancement and promotion should be chosen for the educational pre-management roles in preschool centers.

• Individuals demonstrating a high level of job commitment ought to be selected for the educational pre-management positions in preschool centers.

• Educational managers within preschool environments should prioritize the adherence to professional ethics in their conduct and decision-making processes.

• Individuals possessing academic qualifications pertinent to preschool education should be appointed to the educational management roles within preschool centers.

• Educational managers in preschool settings should establish defined objectives for their professional development.

• Educational managers in preschool settings should devise concrete plans for their professional development initiatives.

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• Educational managers in preschool centers should engage in continuing education courses to foster their professional growth.

• Educational managers in preschool environments should recognize parental concerns and empower themselves and their teams to effectively address these issues.

• Competent institutions should devise and disseminate specific and standardized qualification criteria for the role of preschool educational manager.

• The qualification criteria for the role of preschool educational manager should be periodically reviewed and updated.

• The Welfare Organization is encouraged to articulate specific requirements concerning the professional development of educational managers to preschool institutions.

• The Ministry of Education should likewise communicate specific requirements related to the professional development of educational managers to preschool centers.

• Educational managers in preschool settings should be granted psychological empowerment.

• Educational managers in preschool centers should enhance their communication skills through empowerment initiatives.

• Educational managers in preschool centers should be empowered with specialized knowledge relevant to their roles.

• The fulfillment of the administrative and educational personnel within preschool centers ought to be a primary consideration for the management of these centers, which should endeavor to enhance their satisfaction through targeted professional development initiatives. • The contentment of preschool students and their parents necessitates consideration by the center management, which should seek to elevate their satisfaction levels through effective professional development strategies.

In alignment with established academic conventions, it is incumbent upon researchers to articulate recommendations for future scholars at the culmination of their investigative endeavors, informed by the insights acquired throughout the research process and the constraints encountered. Consequently, the following recommendations are posited for future researchers engaged in this domain of inquiry:

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• It is advisable that the framework derived from this investigation be expanded in subsequent research, incorporating additional independent or mediating variables. Such enhancements would contribute to the development of a comprehensive model pertinent to the professional advancement of educational leaders within preschool centers across the nation, facilitating an evolutionary trajectory.

• Furthermore, it is recommended that future scholars employ alternative methodologies such as the Delphi technique, content analysis, and others during the modeling phase of similar investigations, thereby mitigating one of the principal limitations of this study, namely its labor-intensive nature.

• Moreover, it is suggested that future researchers undertake analogous studies at different educational tiers, mirroring the investigation conducted within preschool settings, to gradually facilitate the design and implementation of indigenous Iranian models as substitutes for general Western paradigms in the sphere of professional development for educational administrators.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Islamic Azad University.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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