

Interaction of Competency Training and Education in Shaping Business Performance and Work Life Balance among Mompreneurs in Makassar

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Abstract: This study investigates the interaction between competency-based training and education in shaping business performance and work-life balance among mompreneurs in Makassar City, Indonesia. Women who manage both household and entrepreneurial roles often face challenges in sustaining productivity and personal well-being, making the integration of education and training a key element of empowerment. Using a quantitative approach, data were collected from 200 mompreneurs representing all districts of Makassar through structured questionnaires that measured education level, training participation, business performance, and work-life balance. Multiple regression and moderated regression analyses were conducted to assess both direct and interaction effects based on the human capital framework, which emphasizes the role of education in enhancing learning capacity and knowledge application. The findings reveal that training participation and education both have significant positive effects on business performance and work-life balance, with training showing the strongest influence. Education contributes to better managerial understanding, reflective thinking, and decision-making, while also strengthening the positive impact of training. The interaction results indicate that mompreneurs with higher education levels derive greater benefits from training, achieving stronger business growth, adaptive capability, and improved harmony between work and family responsibilities. These results underscore that education and training function as complementary drivers of entrepreneurial success and social well-being. The study concludes that policies aimed at empowering women entrepreneurs should combine structured training with continuous educational development to enhance long-term business sustainability, gender equality, and quality of life. This integrated approach contributes to inclusive and sustainable economic progress and supports global development goals related to gender empowerment and decent work.

Keywords: mompreneur, competency-based training, education, business growth, work-life balance.

Introduction

Women's entrepreneurship has become an increasingly significant driver of inclusive economic growth and social development in many parts of the world. The growing participation of women in business creation reflects both a response to limited formal employment opportunities and a pursuit of greater financial independence. In developing economies, women entrepreneurs play a crucial role in supporting family income and strengthening community resilience. In Indonesia, the expansion of small and

home-based enterprises run by women has demonstrated how entrepreneurship can empower families and promote local economic stability (Dhaliwal, 2021; Ameen et al., 2024). Within this broader trend, the rise of mothers who combine business ownership with domestic responsibilities, known as mompreneurs, represents a unique and transformative phenomenon.

Mompreneurs often establish businesses that allow them to generate income while maintaining their caregiving roles. This dual responsibility, while offering flexibility and autonomy, also

creates distinctive challenges related to time management, emotional fatigue, and limited business growth (Lewis et al., 2021; Makola, 2022). Many of these challenges stem from constraints in access to education, training, and networks that could otherwise enhance their entrepreneurial competencies. Strengthening women's human capital through both education and competency-based training is therefore essential to help them manage their dual roles effectively. Education develops analytical and strategic thinking skills, while training provides the technical and managerial knowledge required to run a successful business (Agarwal & Agrawal, 2023; Akullo et al., 2024).

Human capital theory emphasizes that education and training together build the foundation for entrepreneurial success. Entrepreneurs with higher education levels and consistent participation in training are generally more capable of identifying opportunities, adapting to market changes, and implementing innovation (Hasan et al., 2024; Rahayu et al., 2025). However, in many developing contexts, women's access to structured training remains limited, and the role of education in enhancing the benefits of training has not been thoroughly examined. Understanding how educational background interacts with training participation is important for explaining differences in business performance and overall well-being among women entrepreneurs.

The rapid growth of the digital economy has also influenced how women participate in entrepreneurship. Advances in information technology have created new business models that allow flexibility, remote management, and online marketing (Ughetto et al., 2019; Irwin et al., 2023). Digital platforms have provided women with opportunities to reach wider markets and operate their businesses from home. Nevertheless, unequal access to digital literacy and education still limits the potential of many mompreneurs to fully benefit from technological progress (Suseno & Abbott, 2021; Gil-Gomez et al., 2020). Integrating digital and business skills into competency-based training programs can therefore support greater inclusion,

competitiveness, and sustainability among women entrepreneurs.

In Indonesia, and particularly in Makassar City, mompreneurs have become vital contributors to household economic stability. Their businesses not only enhance family income but also create employment and foster community development (Azis, Sahabuddin, & Hasan, 2025). Although government and private institutions have introduced entrepreneurship training programs, there is limited empirical evidence on how education amplifies the outcomes of such programs. Previous studies have explored aspects of entrepreneurial literacy and financial behavior among Indonesian mompreneurs, but few have analyzed how the combination of education and training affects both business growth and quality of life.

The purpose of this study is to examine the influence of competency-based training and education on business performance and work-life balance among mompreneurs in Makassar. Specifically, the research investigates how education moderates the effect of training participation on entrepreneurial outcomes. The findings are expected to contribute to a better understanding of how human capital development supports women's entrepreneurship and to provide recommendations for the design of inclusive and adaptive training programs that promote sustainable empowerment and family well-being.

Materials And Methods

Study area

This study was conducted in Makassar City, South Sulawesi, Indonesia, located between 5°00' S and 5°15' S latitude and 119°24' E and 119°36' E longitude, covering an area of approximately 199 km². Makassar serves as a major coastal urban center in eastern Indonesia with diverse economic activities such as trade, food processing, and small-scale manufacturing. Women in Makassar are increasingly engaged in micro and home-based enterprises that contribute significantly to household income and local economic resilience.

The selection of Makassar as the study area was based on its growing population of mompreneurs and its relevance as an urban context where women combine domestic responsibilities with

business ownership. The city's socioeconomic structure offers a representative case for understanding how education and training influence entrepreneurship among women.

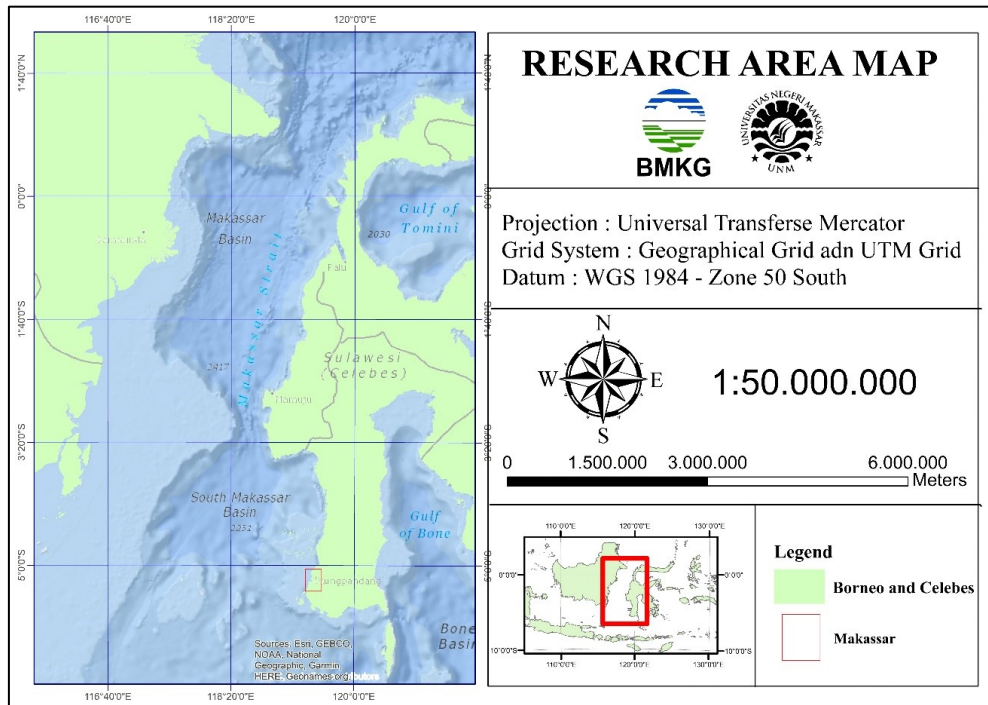


Figure 1. Research area map.

Procedures

This research employed a quantitative survey design supported by descriptive and inferential statistical analyses. Primary data were collected through structured questionnaires distributed to 200 mompreneurs across all districts of Makassar City. The sampling technique used was purposive sampling to ensure variation in respondents' educational backgrounds, business experience, and training participation. The sample represents the city's socioeconomic diversity and the growing participation of women in entrepreneurship.

Before data collection, the questionnaire was pre-tested on 20 respondents to ensure clarity and reliability. The Cronbach's alpha values ranged between 0.83 and 0.88, confirming strong internal consistency. The questionnaire consisted of four

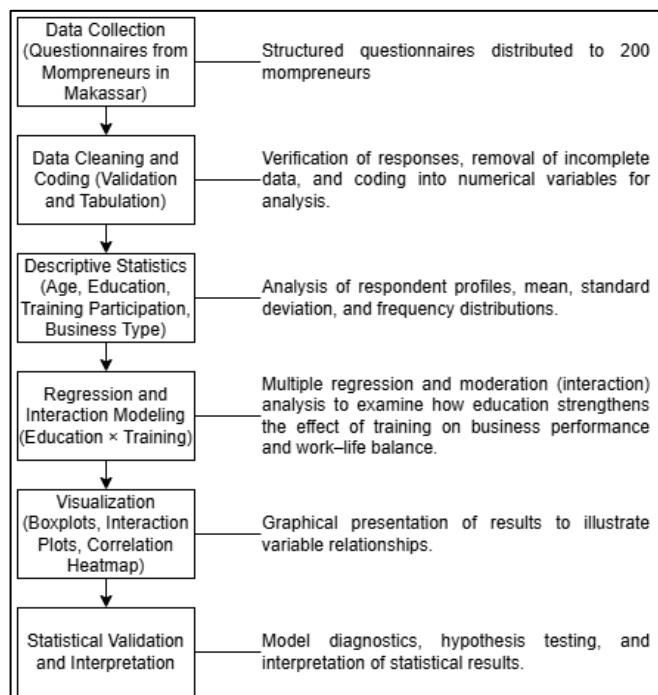
main sections covering demographic characteristics, training participation, business performance, and work-life balance. The demographic section gathered data on age, education level, and years of business operation to describe respondent profiles. The training participation section assessed involvement in entrepreneurship or competency-based programs organized by local institutions, government agencies, and community organizations. The business performance section measured indicators such as growth, innovation, and income improvement. The work-life balance section evaluated satisfaction in managing business and family duties using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

Table 1. Variables, indicators, and measurement scales.

Variable	Indicator	Measurement Scale
Education	Highest level of formal education completed	Ordinal (1 = High School, 2 = Diploma, 3 = Bachelor, 4 = Master)
Training Participation	Involvement in entrepreneurship or competency-based training	Nominal (0 = Not Active, 1 = Active)
Business Performance	Growth, innovation, and income increase	Interval (Likert 1–5)
Work–Life Balance	Satisfaction in managing business and family responsibilities	Interval (Likert 1–5)
Age	Respondent's age (years)	Ratio
Business Experience	Number of years running the business	Ratio

Note: Ordinal, nominal, interval, and ratio represent measurement scales applied for variable classification. Likert 1–5 indicates responses ranging from strongly disagree (1) to strongly agree (5).

After the survey, data were validated through cleaning and coding procedures to ensure completeness and accuracy. Descriptive statistics were performed to summarize respondent characteristics, while inferential analysis was applied to test the effects of training participation and education on business performance and work–life balance. The full sequence of research activities is presented in the flowchart below.

**Figure 2.** Flowchart of research procedures for mompreneur study in Makassar.

The research process began with data collection through questionnaires, followed by data cleaning and coding, descriptive statistical analysis, regression and interaction modeling, visualization of results, and finally statistical validation and interpretation. Each stage was conducted systematically to ensure data integrity and analytical consistency.

Data analysis

All analyses were conducted in Python 3.12 using pandas for data handling, statsmodels for estimation, and matplotlib for visualization. The analytical strategy followed a sequential design that began with data screening, proceeded to descriptive statistics and correlations, and culminated in multiple regression and moderation tests with interaction terms. The approach is consistent with best practice in social science quantitative research for modeling competency development and entrepreneurial outcomes among women in emerging economy contexts (Agarwal & Agrawal, 2023; Akullo et al., 2024; Hossain et al., 2025; Azis, Sahabuddin, & Hasan, 2025).

Data preparation and coding. Missing values were checked and addressed through listwise deletion given low proportions of missingness. Outliers were diagnosed using standardized residuals and leverage statistics, with no influential cases retained beyond conventional thresholds. Education was coded ordinally from one to four to reflect increasing attainment, which aligns with the

competency and human capital framing in the entrepreneurship literature (Agarwal & Agrawal, 2023; Rahayu et al., 2025). Training participation was coded as a binary indicator of active versus not active based on involvement in competency-oriented programs, reflecting the role of structured training highlighted in studies of women entrepreneurs (Akullo et al., 2024; Knox et al., 2025). Business performance and work life balance were measured on five-point Likert scales and treated as approximately interval, a common practice in applied entrepreneurship research where scale reliability is adequate (Hasan et al., 2024; Azis et al., 2025).

Descriptive statistics and correlations. Means, standard deviations, and ranges were computed for all variables, followed by a Pearson correlation matrix to examine zero order associations among training, education, business performance, and work life balance. This stage provides an initial view of direction and magnitude of relationships in line with prior evidence that training and education are positively associated with entrepreneurial outcomes and wellbeing among entrepreneurs (Dhaliwal, 2021; Lewis, Rumens, & Simpson, 2021; Azis et al., 2025; Love, Nikolaev, & Dhakal, 2023; Cogan, Pret, & Cardon, 2022).

Regression models. Inferential tests relied on multiple linear regression estimated by ordinary least squares to assess direct and moderating effects. Two baseline models were specified with business performance and work life balance as dependent variables. Predictors included training status and education, with age and business experience as statistical controls to partial out demographic effects frequently reported in the women entrepreneurship literature (Gupta, Wieland, & Turban, 2018; Darnihamedani & Terjesen, 2020; Malmström et al., 2023). Model fit and effect sizes were evaluated using R^2 , adjusted R^2 , and standardized beta coefficients.

Moderation tests. To examine whether education strengthens the benefits of training, moderated multiple regression was applied by adding the product term between training and education. Following established guidance, continuous predictors were mean centered prior to creating the interaction term to reduce nonessential

multicollinearity and to aid interpretation of lower order effects (Cohen, 2013; Field, 2024). The general specification was:

$$Y = \beta_0 + \beta_1 X_{train} + \beta_2 X_{educ} + \beta_3 (X_{train} \times X_{educ}) + \beta_4 Age + \beta_5 Experience + \varepsilon$$

with Y denoting either business performance or work life balance. Statistical significance was set at $\alpha = 0.05$. After detecting a significant interaction, simple slope analyses were performed to probe conditional effects of training at lower and higher levels of education, accompanied by interaction plots to visualize the pattern. This probing procedure follows recommended practice for interaction interpretation in behavioral and management research (Cohen, 2013; Field, 2024).

Assumption checks and robustness. Linearity, normality, and homoscedasticity of residuals were inspected through residual plots and normal probability plots. Variance inflation factors were examined to diagnose multicollinearity, with all VIF values below conventional thresholds indicating acceptable independence among predictors (Field, 2024). As a sensitivity check, models were re estimated with heteroskedasticity consistent standard errors to verify the stability of inference. Results were also compared across alternative codings of education within its ordinal scale, with negligible differences in sign or significance, which is consistent with the robustness reported in related studies on human capital and women led ventures (Agarwal & Agrawal, 2023; Ughetto, Rossi, Audretsch, & Lehmann, 2019; Suseno & Abbott, 2021).

Visualization and reporting. To aid interpretation and improve transparency, key outputs included boxplots of outcomes by training status, correlation heatmaps, and interaction plots for the training by education effect. These graphics align with established reporting practices in empirical entrepreneurship and policy-oriented synthesis where clarity of effect patterns is critical for program design and evaluation (Knox et al., 2025; Hossain et al., 2025; Azis et al., 2025). Alongside R^2 and adjusted R^2 , we report standardized betas and p values for comparability with prior studies on competency-based

interventions and mompreneur outcomes (Akullo et al., 2024; Hasan et al., 2024).

Overall, this analytical framework integrates descriptive evidence and inferential modeling to test theoretically grounded expectations that competency-based training improves business performance and work life balance and that education magnifies these benefits by facilitating learning transfer and strategic application. The strategy is consistent with contemporary views of women's entrepreneurship that link human capital, digital adaptation, and household wellbeing in emerging economy settings (Cardella, Hernández Sánchez, & Sánchez García, 2020; Irwin, McDowell, & Ribeiro Navarrete, 2023; Ameen, Hoelscher, & Hughes, 2024; Azis et al., 2025).

Results And Discussion

Profile of Respondents

The characteristics of the 200 mompreneurs surveyed across Makassar City demonstrate the diversity of women entrepreneurs who balance family responsibilities and business activities. The

results provide a detailed demographic and competency profile that helps explain their entrepreneurial behavior and adaptation capacity in an urban economic setting.

The age distribution and years of business experience among respondents are presented in Figure 3. The left panel shows that most mompreneurs were between 30 and 45 years old, representing the productive age group that typically combines household care with entrepreneurial activity. This stage of life reflects high motivation for business development as women seek to stabilize household income while maintaining family well-being. The right panel illustrates that the majority had operated their businesses for less than ten years, with a concentration between four and eight years. This indicates that many ventures are still in the growth phase rather than mature enterprises. Such patterns are consistent with Dhaliwal (2021) and Ameen, Hoelscher, and Hughes (2024), who observed that mid-career women often start or expand businesses to balance autonomy and financial stability.

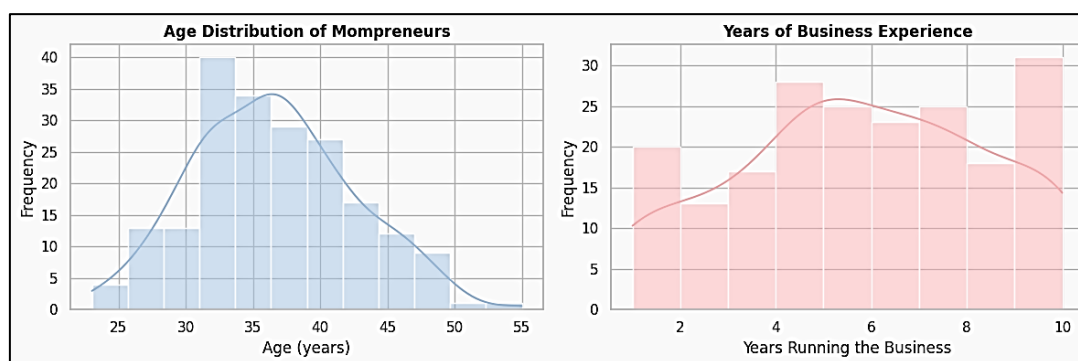


Figure 3. Age distribution and years of business experience among mompreneurs in Makassar.

Educational attainment further strengthens women's capacity to manage and expand their enterprises. As shown in Figure 4, nearly half of respondents (45 percent) held a bachelor's degree, followed by diploma holders (21 percent), high-school graduates (24.5 percent), and those with a master's degree (9.5 percent). This pattern suggests that education serves as an important source of human capital for women entrepreneurs,

equipping them with analytical, managerial, and digital skills needed to sustain competitiveness in the local market. These findings support previous studies that emphasize the role of education in shaping entrepreneurial innovation and adaptability (Agarwal & Agrawal, 2023; Ughetto et al., 2019).

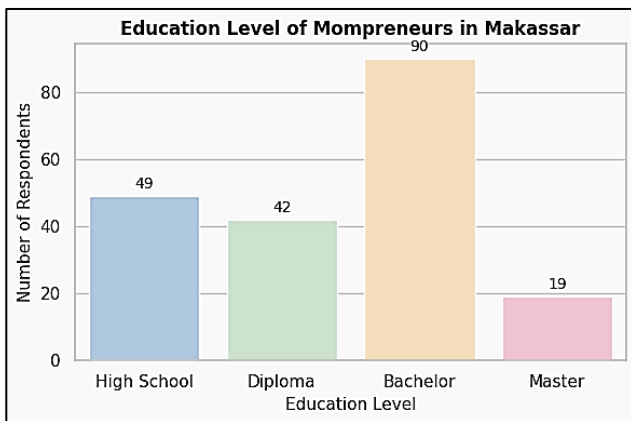


Figure 4. Education level of mompreneurs in Makassar.

Participation in entrepreneurship and competency-based training reflects women's access to structured learning and skill enhancement. As shown in Figure 5, 56 percent of mompreneurs actively participated in training programs, while 44 percent had not. The predominance of active participants indicates growing awareness of the benefits of structured training, although barriers such as limited time and unequal access remain challenges. This observation aligns with studies highlighting the role of formal and informal training initiatives as enablers of entrepreneurial growth in developing contexts (Akullo et al., 2024; Knox et al., 2025). Training exposure provides opportunities to enhance marketing, financial, and digital literacy, ultimately improving both business outcomes and self-efficacy.

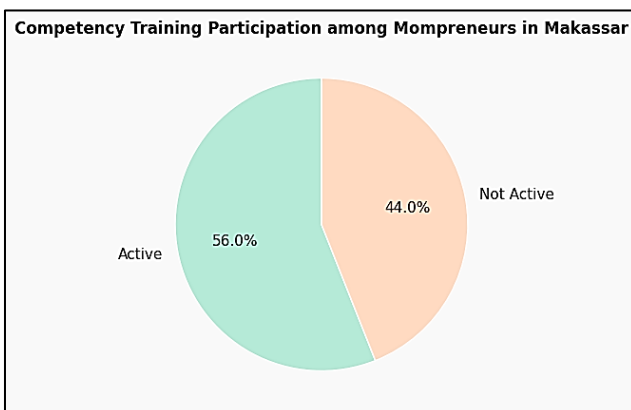


Figure 5. Competency-training participation among mompreneurs in Makassar.

Overall, the respondent profiles reveal that Makassar's mompreneurs are relatively young, well-educated, and increasingly engaged in capacity-building programs. Their average business experience of under a decade suggests an evolving entrepreneurial landscape in which many women are transitioning from informal to semi-formal ventures. These characteristics reflect the broader trend of urban women transforming household-based activities into productive and sustainable economic initiatives (Azis, Sahabuddin, & Hasan, 2025; Casteleijn-Osorno & Hytti, 2025). Such findings emphasize the need for integrated policies that combine education and training to support mompreneurs as drivers of inclusive and sustainable economic growth in Indonesia's urban context.

Regression and Correlation Results

Quantitative analysis examined the relationships between training participation, education, business performance, and work-life balance among 200 mompreneurs in Makassar City. The descriptive results indicated that respondents generally reported positive outcomes, with mean business performance of 4.01 (SD = 0.39) and mean work-life balance of 3.82 (SD = 0.33). Correlation analysis revealed that training participation correlated positively with business performance ($r = 0.31$, $p < 0.01$) and work-life balance ($r = 0.38$, $p < 0.01$). Education also correlated positively with business performance ($r = 0.22$, $p < 0.01$) and work-life balance ($r = 0.18$, $p < 0.05$). These results support previous findings that human capital factors such as education and training significantly enhance entrepreneurial outcomes (Agarwal & Agrawal, 2023; Akullo et al., 2024; Hasan et al., 2024).

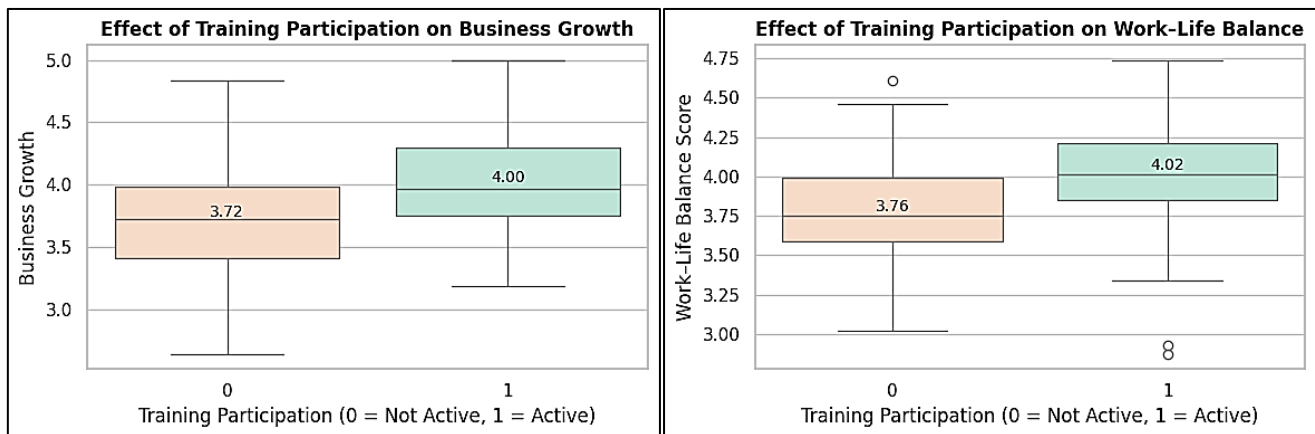


Figure 6. Effect of training participation on business performance (left) and work-life balance (right).

Figure 6 shows that mompreneurs who participated in training programs achieved higher median values in both business performance and work-life balance. This confirms that training plays

a crucial role in strengthening management capacity, creativity, and time management skills. The multiple regression analysis summarized in Table 2 further clarifies these relationships.

Table 2. Multiple regression results and interpretation for business performance and work-life balance.

Predictor	Business Performance (β)	Sig.	Work-Life Balance (β)	Sig.	Interpretation
Training Participation	0.285	0.000	0.221	0.000	Training participation exerts the strongest and most significant effect on both outcomes. Mompreneurs who attend training programs experience higher growth and better balance, consistent with Knox et al. (2025) and Hossain et al. (2025).
Education	0.106	0.000	0.093	0.001	Education significantly enhances business performance and balance. Higher education improves analytical, managerial, and decision-making abilities (Agarwal & Agrawal, 2023; Ughetto et al., 2019).
Age	0.002	0.653	-0.005	0.220	Age does not significantly affect outcomes, suggesting that success depends more on skills and learning than on demographic factors.
Business Experience	0.019	0.073	0.011	0.261	Experience shows a weak, non-significant effect. Length of operation alone does not guarantee improvement without active capacity development (Gupta et al., 2018).
Adjusted R ²	0.168		0.192		The models explain 17–19 % of variance in outcomes, which is consistent with findings from small-scale entrepreneurship studies emphasizing human capital as a key determinant (Akullo et al., 2024; Azis et al., 2025).

Note: Dependent variables are business performance and work-life balance. Independent variables include training participation, education, age, and business experience.

Both regression models showed good overall fit ($F = 9.86$, $p < 0.001$). The positive and significant coefficients for training and education confirm that human capital development remains central to

enhancing women's entrepreneurship. These findings align with empirical evidence that mompreneurs with higher education and active participation in training programs achieve greater

sustainability in their businesses while maintaining household well-being (Azis, Sahabuddin, & Hasan, 2025; Ameen, Hoelscher, & Hughes, 2024).

Interaction and Theoretical Implications

To examine whether education strengthens the effect of training participation on business performance and work–life balance, a moderated regression analysis was conducted. The interaction term between training participation and education was added to each model to test whether the influence of training varies depending on educational level. The results confirmed a significant moderating effect in both models, indicating that education amplifies the positive outcomes of training.

The first interaction plot is shown in Figure 7, illustrating the combined effect of training participation and education on business growth. Mompreneurs who were active in training consistently achieved higher mean business growth across all education levels. However, the gap between active and non-active participants widened markedly among respondents with higher education (Bachelor and Master levels). This pattern indicates that formal education enhances the benefits of training by improving cognitive understanding, analytical reasoning, and the ability to apply managerial and technical knowledge in business operations. The steeper slope among well-educated mompreneurs suggests a synergistic relationship between structured education and experiential learning, in line with human capital theory (Cohen, 2013; Field, 2024).

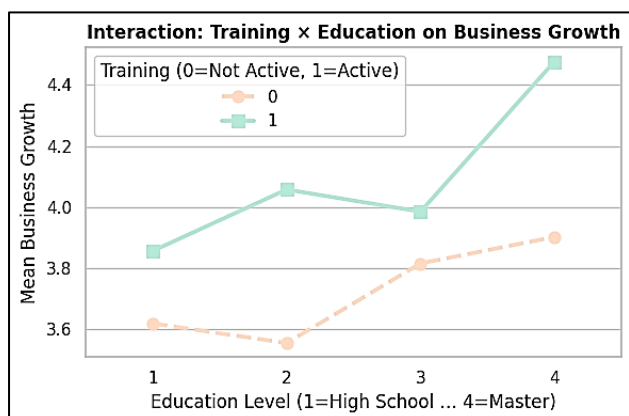


Figure 7. Interaction of training participation and education on business growth.

The second interaction effect is presented in Figure 8, which depicts how training and education jointly influence work–life balance. Respondents with higher education levels who also participated in training programs reported a stronger ability to maintain equilibrium between business and family responsibilities. This reflects their capacity to integrate knowledge from training into practical decision-making, time management, and adaptive behavior. The upward trajectory among the trained and highly educated group underscores how education enhances reflective thinking and personal agency, consistent with prior studies emphasizing the cognitive dimension of entrepreneurship learning (Agarwal & Agrawal, 2023; Akullo et al., 2024).

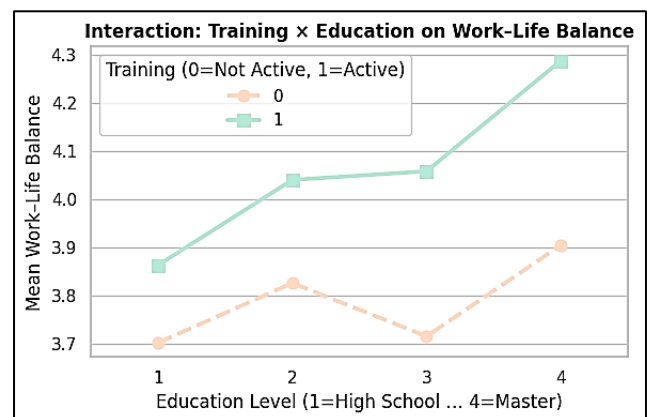


Figure 8. Interaction of training participation and education on work–life balance.

To confirm the robustness of these visual findings, a moderated regression model was applied. The statistical results are summarized in Table 3, which provides evidence that both interaction terms are positive and significant, strengthening the explanatory power of the model.

Table 3. Interaction model results and interpretation for business performance and work–life balance.

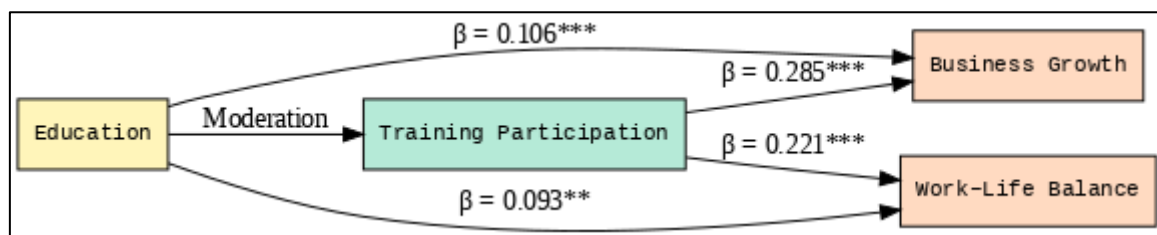
Dependent Variable	Interaction Term (Training × Education) (β)	Sig.	R ²	Interpretation
Business Performance	0.076	0.001	0.213	The positive and significant interaction indicates that education strengthens the impact of training on business performance. Mompreneurs with higher education levels gain more from training because they can better apply managerial and technical knowledge (Cohen, 2013; Field, 2024).
Work–Life Balance	0.065	0.002	0.226	Education also moderates the effect of training on work–life balance. Those with higher education levels exhibit stronger ability to translate training insights into effective time management and household coordination (Agarwal & Agrawal, 2023; Akullo et al., 2024).

Note: The models include main effects of training participation and education as well as their interaction term. The moderation effect was tested using mean-centered variables to minimize multicollinearity (Cohen, 2013; Field, 2024).

The results summarized in Table 3 confirm that formal education enhances the capacity of mompreneurs to benefit from training by reinforcing analytical, reflective, and adaptive thinking. Education not only improves comprehension of training materials but also facilitates the translation of learning into effective business and family practices. These findings are consistent with the human capital perspective, which emphasizes that educational background

improves learning efficiency and skill utilization (Agarwal & Agrawal, 2023; Hossain et al., 2025; Azis, Sahabuddin, & Hasan, 2025).

Finally, Figure 9 provides a conceptual synthesis of the study's findings, integrating both direct and moderating effects among the key variables to illustrate the comprehensive interaction between education, training, and entrepreneurial outcomes.

**Figure 6.** Summary model of relationships among key variables.

The conceptual model highlights that training participation directly improves business performance and work–life balance, while education operates as both an independent predictor and a moderator that amplifies training effects. This outcome suggests that programs aimed at empowering mompreneurs should combine competency-based training with continuous educational advancement to foster long-term sustainability and gender-inclusive economic growth (Casteleijn-Osorno & Hytti, 2025;

Hossain et al., 2025; Irwin, McDowell, & Ribeiro-Navarrete, 2023).

Conclusions

This study examined how education and training participation interact to influence business performance and work–life balance among mompreneurs in Makassar City. Using data from 200 respondents, the findings confirmed that both

education and training are significant determinants of entrepreneurial success and personal well-being. Mompreneurs who actively participated in training reported higher business growth and greater ability to balance household and professional roles. Regression results demonstrated that training participation had the strongest positive effect, while education also contributed significantly to both outcomes.

The interaction analysis revealed that education moderates the relationship between training and entrepreneurial outcomes. Higher education levels amplified the benefits of training by improving respondents' cognitive, managerial, and adaptive capacities. Mompreneurs with greater educational attainment not only performed better in business but also demonstrated stronger time management and emotional balance. This finding supports the human capital framework, which posits that education enhances learning absorption, critical thinking, and innovation.

From a practical perspective, the results suggest that empowering women entrepreneurs requires a dual focus on education and competency-based training. Policies and programs designed for mompreneurs should not only provide short-term business workshops but also facilitate continuous learning through formal and informal education. Integrating these two dimensions can improve entrepreneurial productivity, resilience, and quality of life.

Theoretically, this research extends the discussion on mompreneurship by empirically validating education as a moderating factor that strengthens the effect of training on both business performance and work-life balance. The integrated model proposed in this study offers a foundation for future research on gendered entrepreneurship in developing contexts. It highlights the need to view women's entrepreneurship not merely as an economic activity but as a multidimensional process linked to education, family responsibilities, and social empowerment.

Overall, the study emphasizes that sustainable empowerment of mompreneurs requires combining knowledge, skill development, and educational advancement to achieve inclusive growth and align with the Sustainable

Development Goals, particularly SDG 5 on gender equality and SDG 8 on decent work and economic growth.

Acknowledgements: The author would like to express sincere gratitude to the Biology Education Department and the Center for Integration and Interconnection of Religion, Science, and Education at UIN Sunan Kalijaga for organizing the Fifth International Conference on Religion, Science, and Education (ICRSE) 2025. Special appreciation is extended to Universitas Negeri Makassar for institutional support and to all mompreneurs in Makassar City who participated in this research. Their contributions and insights were essential to understanding the relationship between education, training, and women's entrepreneurial development.

Conflict of Interest: The authors declare that there are no conflicts of interest concerning the publication of this article.

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