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Research paper  
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## MEDIATING ROLE OF PROCESS INNOVATION ON THE RELATIONSHIP BETWEEN ENTREPRENEURIAL TRAINING AND BUSINESS PERFORMANCE OF WOMEN FOOD VENDORS IN ILALA MUNICIPALITY, TANZANIA

**Abstract:** *This study was aimed to investigate the mediating role of process innovation on the relationship between entrepreneurial training and the business performance of women food vendors in Ilala Municipality, Tanzania. Understanding this relationship is important since entrepreneurship is regarded as a crucial aspect of economic development in general and within informal economies that are mainly performed by women. Informed by Schumpeter's theory of innovation, the study used a quantitative method to analyse data from 349 women food vendors, using partial least squares structural equation modelling (PLS-SEM). The results indicate that entrepreneurial training has a positive impact on process innovation ( $\beta = 0.757, p < 0.001$ ), and process innovation has an impact on business performance ( $\beta = 0.327, p < 0.001$ ). The mediation analysis demonstrates that training has a statistically significant indirect effect on performance through process innovation ( $\beta = 0.247, p < 0.001$ ), suggesting that mediation accounts for 43% of the total effect. These findings suggest that there is a value in developing more targeted training programs related to process innovation projects, as well as support for better business performance. Ultimately, it is critical for decision-makers and trade practitioners involved in development to co-design skills programs pertaining to capacity building and innovation that are geared toward building up informal economy development and sustainability. In this respect, this study recommends the incorporation of entrepreneurial training blended with process innovation to realize measurable business performance. Future research might examine the longer-term effects of such interventions beyond this study and consider the use of digital tools in creating an environment of innovation for women entrepreneurs.*

**Keywords:** *Women entrepreneurs, informal sector, Entrepreneurial Training, Process Innovation, Business Performance*

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## 1. Introduction

In recent years, there has been increasing awareness of the key contribution that entrepreneurship delivers towards achieving economic development, job creation, and poverty reduction, both in developed and developing countries (Borrás & Edquist, 2015). In spite of these contributions, women entrepreneurs in developing economies encounter huge obstacles in maintaining and scaling businesses because they have limited access to resources, training, and innovation (Belitski et al., 2020). Even though there is a strong push for entrepreneurial training as a method of improving business performance through imparting entrepreneurs with skills, the direct effects are often not as well understood between contexts (Aliyu et al., 2019). The role of innovation processes, as the mediator of the knowledge transfer into business success, is often not studied, especially when factoring in the effects of training and performance from the women entrepreneur perspective (Al-Sa'di et al., 2017). The trend is particularly evident among women entrepreneurs working in the informal sector. Despite forming an overwhelming majority of contributors to the informal economies globally, women are often not tied to networks that support their service (Mathaulula et al., 2016)

The informal sector is an integral part of many Tanzanians' livelihoods, as a high proportion of women micro-entrepreneurs comprise the majority of food vendors (Mkama, 2024). Women food vendors in Ilala Municipality, despite their significant economic contributions, continue to face challenges such as a lack of access to formal training, limited adoption of new business practices, and barriers to financial resources for technology (Rosli & Sidek, 2013). Although existing studies have examined the relationship between entrepreneurial training and business performance (Shindina et al., 2015), the role of process innovation as a mediator in the relationship between

entrepreneurial training and women-led enterprises in the informal economy has not been examined. Process innovation is defined as the implementation of a new or significantly modified process for production or delivery (Cheng et al., 2014) and can improve efficiency, reduce costs, and improve the quality of services, but women food vendors are not currently adopting it; this is a result of socio-cultural and structural barriers that continue to exist (Macdonald et al., 2007)

Research indicates that innovation plays a crucial role in connecting entrepreneurial knowledge to business performance (Durmuş-Özdemir & Abdukhoshimov, 2018). Nevertheless, much of the research has focused on formal businesses or high-tech industries, and most studies ignored informal businesses and the role of women in limited resource contexts (Aliasghar et al., 2019). Prior studies have investigated the effects of entrepreneurship training on business performance in Tanzania (Mkama, 2024), however, the mediation processes in entrepreneurship training, notably with respect to process innovation, have not received as much attention. This is troublesome, as process innovation is likely a key element in the transition from training to performance improvement, especially in contexts when self-employed women are likely working in labor-intensive sectors like food vending (Taleb et al., 2023). If a mediated framework capturing the role of process innovation is not considered, there is a risk that policy and development agencies will develop policies and interventions to address women in informal markets that do not consider their particular challenges.

Theoretically, it is believed that entrepreneurial training improves human capital, spurs increased innovation, and ultimately promotes business growth (Bauernschuster et al., 2009). However, we know little about how these relationships unfold in non-formal contexts, particularly with women food vendors and their businesses. This might partly explain why

we observe variation in the effectiveness of training programs, some resulting in economic improvement while others do not (Salomo et al., 2007). In addition, new methods of preparation, a more sophisticated inventory system, or better customer service processes tend to be more productive than the established practices of food vendors (Haryanto et al., 2017). Nevertheless, it is unclear to what extent the training programs in Ilala Municipality encourage process innovation and all other improvements in business performance. This question is worth further empirical consideration

Furthermore, while technological innovation is widely recognized, process innovation can be attained through inexpensive, appropriate changes within an informal micro-enterprise (Kim & Ryu, 2017). These might include better sanitary practices in food preparation, improved ways of cooking, and digital bookkeeping among women food vendors (Ramayah et al., 2020). Nonetheless, observed improvements may not be realized unless targeted training promotes practical innovations that can be scaled (Chell, 2013). Socio-cultural factors such as gender norms and a lack of access to a network can also limit women's ability to adopt and benefit from process innovation (Umar & Hashim, 2018). As a result, the mediating effect of process innovation should be central to gender-sensitive entrepreneurship programs that aim to improve business performance.

While there is an increasing interest in women's entrepreneurship in Africa, there still has not been a significant body of empirical research on how to leverage interventions, both empirical and experimental, to create sustainable improvements in business outcomes through process innovation (Taticchi, 2010). Much of the work to date has focused on determining direct effects and overlooked the potentially facilitating or hindering role of process innovation in the performance improvement process (Micheli et al., 2007). In the case of Tanzania, where the informal sector provides significant employment and income,

understanding the intervening role of process innovation is key to achieving inclusive economic growth, especially in developing countries (Al-Husseini et al., 2022). In the absence of knowing how to enhance business outcomes through process innovation, policymakers risk implementing a "one size fits all" training program that does not recognize or address the specific challenges women food vendors face to reach their sustainable business potential.

In order to respond to these issues, this study is focused on examining process innovation as a mediator of the relationship between providers of entrepreneurial training such as self-sufficient training center providers and among the business performance of women food vendors in the Ilala Municipality. The study aims to create a sound understanding of how training influences performance through the lens of process innovation using Schumpeterian innovation theory and the dimensions of the Model of Entrepreneurial Performance (Sein & Prokop, 2021). The findings are intended to have both theoretical and practical implications by providing empirical evidence mainly to guide policymakers, training providers, and other development practitioners working with female food vendors at the nexus of support, brokering, and the informal economy.

This research is significant as it departs from the traditional training-performance model by introducing a mediator, process innovation, that can provide additional understanding of business performance (Nadia Dedy et al., 2016). As such, it opens avenues for women food vendors to turn training into sustainable business growth while providing broader economic empowerment and poverty alleviation throughout Tanzania. The implications of this research are important because it is aligned with the global agenda to promote gender equitable entrepreneurship and innovation, as demonstrated in the Sustainable Development Goals (SDGs) (Sartori Riccardo, 2018). Thus, this work hopes to offer insight into transitioning

women entrepreneurs, who are often marginalized, to more competitive, self-sufficient enterprises within the informal economy. Finally, the findings will provide valuable insights for policy action to increase support for women entrepreneurs at local, district, and regional levels and planned future training programs to improve business performance in similar contexts. Thus, this study is aimed at understanding the mediating effect of process innovation between entrepreneurial training and the business performance of women food vendors in Ilala Municipality.

## 2. LITERATURE REVIEW

### 2.1 Business Performance

Business performance is a multifaceted concept that includes any financial gain, operational effectiveness, market expansion, and sustainability (Micheli et al., 2007). Business performance has been referenced in the literature around what organizations are able to achieve against their objectives. Common operational measures of business performance include revenue increases, cost savings, customer satisfaction, and competitive advantage. Much of the literature pertaining to SMEs has mostly oriented the notion of performance towards organizations' abilities to adapt to dynamic market conditions and to allocate and manage limited resources (Haryanto et al., 2017). However, for women entrepreneurs leading a micro business (especially non-formal), performance indicators may be business life cycle, consistent income, and broader impact on all members of the household (Mkama, 2024). Nevertheless, the research is still comparing businesses and present limited variation due to a lack of standardized performance assessment in informal businesses to date (Aliyu et al., 2019).

Scholars frequently employ empirical studies to investigate the relationship between

business performance and both internal capabilities and external market contexts and the process of adopting innovations (Borrás & Edquist, 2015). Innovative work practices can lead to increased productivity and responsiveness to the market, resulting in sustainable competitive advantage (Cheng et al., 2014). However, in resource constrained contexts, business performance enhancements often occur through incremental innovations as opposed to a larger systems change (Kim & Ryu, 2017). To further complicate the outcomes of woman entrepreneurs' performance experiences are socio-cultural barrier issues, including limited or no access to finance and culturally gender based constraints (Umar & Hashim, 2018). Therefore, while we want to know and understand what is affecting and motivating business performance, while being mindful of the contextual constraints in informal sectors and disadvantage barriers that women face specifically, we need to address these contextual constraints and understanding (Mathaulula et al., 2016).

A considerable amount of literature has emerged on the subject of entrepreneurial training, its possible influence on innovation and subsequent business performance, while substantial variation has been found across industry and nation (Belitski et al., 2020). Some papers offer evidence to suggest training have a direct positive influence on performance (Shindina et al., 2015); and other articles point to this process of innovation mediating the effects of training and enhancing the training and performance relationship (Al-Sa'di et al., 2017). Tanzania, the unit of analysis for this study, we know very little about women food vendors (there are simply many informal enterprises), and we also do not know much about how training might spur increased performance (Mkama, 2024). This necessitates broadening our understanding of how process innovation and the development of preparation skills and inventory management can improve training and performance in business.

## **2.2 Entrepreneurial Training and Process Innovation**

The relationship among entrepreneurship training and innovation in SMEs is important for improving efficiency in small businesses, particularly for female entrepreneurs' food businesses. Entrepreneur training courses give the participant this skill set, capability and confidence to commence the implementation of innovations in SMEs (Aliyu et al., 2019). For example, training initiatives that teach new cooking methods, inventory systems, and customer service represented the use of creative thinking in the development of innovative food preparation and delivery methods among women food vendors (Mathaulula et al., 2016). In addition, studies have continued to suggest that trained entrepreneurs can read inefficiencies and barriers more readily than those who are not trained, which can lead to improvements. (Durmuş-Özdemir & Abdulkhoshimov, 2018). This empirical support adds weight to the argument for entrepreneurial training as a place or a foundation to create process innovation in small businesses.

Additionally, absorptive capacity is an important concept to understand how entrepreneurial training can lead to process innovation. Absorptive capacity is defined as the ability of an organization to value, assimilate, and apply new knowledge to commercial ends (Ramayah et al., 2020). Women food vendors engaged in continual education and training develop a heightened absorptive capacity, which allows them to adapt best practices and innovative approaches (Belitski et al., 2020). For example, research has shown that entrepreneurs had developed skills in digital marketing and operational capacity before they began to innovate their service offerings. Specifically, they innovated by changing their service offerings to include online ordering and delivery, developing innovative process and operational capacity, and reaching new segments of customers

(Bauernschuster et al., 2009). This implies that strong entrepreneurial training enhances awareness and knowledge capacity, which is also indicative of the potential for an ongoing entrepreneurial innovative process innovation that leads to business development.

The link between training and process innovation emphasizes the importance of learning through experience in the entrepreneurial process. Studies show that programs that offer real-world learning, in addition to mentoring, create more innovative entrepreneurs because they are engaging with the in-class ideas in practice (Shindina et al., 2015). Testing new processes in a safe space supports women food vendors to create imaginative solutions to challenges they encounter in their ventures (Haryanto et al., 2017). Training that includes collaboration and peer learning opportunities can assist with the development of innovative ideas and sharing of processes among women entrepreneurs and support the collaborative capacity for process innovation in their communities (Cepeda-Carrion et al., 2023). Therefore, entrepreneurial training serves as an important function to support an innovative mindset that inspires ongoing process innovation among women food vendors.

***Hypothesis 1 (H<sub>1</sub>): Entrepreneurial training has a positive and significant influence on the process innovation of women food vendors in Ilala Municipality.***

## **2.3 Process Innovation and Business Performance**

The association of process innovation and business performance for women food vendors highlights the role of innovative practices in improving business performance and efficiency. More current studies have shown that process innovation that improves production and delivery processes can deliver higher efficiency, lower costs, and higher customer satisfaction, all key components to success for an independent

food vendor (Aliyu et al., 2019). As an example, studies show that women food vendors that employed new methods of cooking or usage of their supply chains had greater performance than their peers that employed traditional methods (Mkama, 2024). These innovations help with efficiencies, better respond to fluctuating customer preferences, and expose the vendor to greater market competition (Durmuş-Özdemir & Abdulkhoshimov, 2018). In addition, utilizing innovative practices within business operations creates greater autonomy and financial independence for women entrepreneurs (Mathaulula et al., 2016).

Furthermore, the role of training and skills development in supporting process innovation should not be underestimated. Research indicates that specific training courses for entrepreneurs encourage women food vendors to integrate new skills that support the development of innovative and problem-solving opportunities (Bauernschuster et al., 2009). Training programs offer entrepreneurs the opportunity to learn about new technologies and more efficient ways of working, which facilitate process innovations (Shindina et al., 2015). For example, women vendors who had received formal training were able to introduce modern food preservation techniques and new customer service procedures, which had a positive impact on their business (Belitski et al., 2020). Furthermore, knowledge acquisition following this training examined the importance of absorptive capacity in explaining the mediation between training and successful innovation adoption (Ramayah et al., 2020). This indicates that a training program can help lead to the introduction of process innovations by women vendors in order to develop their individual and group performance outcomes. Gaining insight into the mechanics of knowledge management is important in gaining an understanding of how process innovations impact women's food vendor

businesses' overall performance. (Al-Sa'di et al., 2017) state that effective knowledge management can lead to better performance outcomes through the innovation process. Women food vendors, as an example, who partake in knowledge-sharing practices, through engagement with peers or community-based training to enhance group-based training, will be more likely to act on any innovation processes to improve their business processes (Ibrahim, 2025). As women food vendors act on product and process innovations, they will increase their quality differentiation and ultimately customer loyalty (Cepeda-Carrion et al., 2023). Therefore, women food vendors that develop an environment and processes consistent with continuous learning and innovation will maximize their performance objectives.

***Hypothesis 2 (H<sub>2</sub>): There is a positive and significant effect of process innovation on the business performance of women food vendors in Ilala Municipality.***

#### **2.4 Entrepreneurship Training, Process Innovation, and Business Performance**

The relationship between entrepreneurship training, process innovation, and business performance is pivotal for understanding how women entrepreneurs within the food space can be successful within competitive economies. Entrepreneurship training provides different women food vendors with valuable skills and knowledge which strengthen their ability to innovate and a more efficient process. Studies find that food vendors who engage in comprehensive training programs are more likely to adopt innovative practices that result in operational improvements, such as supply chain products or new cooking practices that align with customer preferences (Aliyu et al., 2019). The increase in process innovation is a direct correlation to the increase in operational performance as vendors develop their ability to streamline operations,

reducing costs, which contributes to overall business success (Aliyu et al., 2019). While entrepreneurship training may not provide the valuable tools and structures for innovation, it supports the overall business performance of women food vendors.

Furthermore, the growing recognition of process innovation as a mediating variable between entrepreneurial training and business performance is emerging. Women food vendors, for example, will use the process innovation opportunities gleaned from training to not only become more efficient but create additional value for the food they provide (Durmuş-Özdemir & Abdulkhoshimov, 2018). The application of a new food preservation process, for example, may increase product quality and offer greater shelf-life, which results in increased customer satisfaction and commitment (Haryanto et al., 2017). Vendors may also use process innovations to respond more effectively to market changes through the evolution of consumer preferences towards healthier food options. As such, the benefits of process innovation result in greater business performance and profitability as the benefits of training and innovation strategies results in positive outcomes for women-led food businesses (Cepeda-Carrion et al., 2023).

Furthermore, the link between entrepreneurial training, process innovation, and business performance illustrates the relevance of having a culture of learning in the entrepreneurial ecosystem. According to previous studies, women food vendors who create a culture of continual learning will be in the best position to leverage the training towards innovative outputs (Belitski et al., 2020). If the vendor can cultivate a culture of reflection and adjust to new business conditions after each training, they can continue to identify opportunities for process improvement that would contribute to their business interpretations (Shindina et al., 2015). This proactive approach to learning promotes a cycle of innovation whereby the vendor continues to improve and develop

processes around successful practices while ensuring that they are maintaining positive performance growth. This relationship reinforces that moving women food vendors to embrace entrepreneurial training can produce a decision-making cascade to enhance not only innovation but also operational performance of their business significantly.

***Hypothesis 3 (H<sub>3</sub>): Process innovation from entrepreneurial training explains business performance among women food vendors in Ilala Municipality.***

## **2.5 Theoretical Framework of the Study**

The study presented in this paper rests on Schumpeter's Theory of Innovation (Schumpeter, 1934) integrated with (Van Vuuren & Nieman, 1997) Entrepreneurial Performance Model. Each perspective contributes to understanding the relationships between entrepreneurial training, process innovation and business performance in women entrepreneurs in the food sector. Schumpeter's Theory of Innovation emphasizes the entrepreneur's vital role as agents of change and innovation in the economy. As outlined by (Breschi et al., 2000), entrepreneurs create and discover new products, processes, and methods to create, develop and disrupt markets in their sector. He views innovation in many different forms, including new goods, production processes, opening up new markets, new sources of supply, and new types of organizations. This theory supports the importance of entrepreneurial training by which women food vendors develop the relevant knowledge and skills to adopt an innovative practice. Entrepreneurial training improves their capacity to adopt new food preparation techniques and make operational improvements that create an environment that can produce innovation. In line with Schumpeter's view, entrepreneurial training leads to real process innovation that can enhance the competitiveness and long-term

sustainability of women-led businesses (Breschi et al., 2000).

Conversely, the Entrepreneurial Performance Model proposed by (Van Vuuren & Nieman (1997) creates an opportunity to evaluate the multidimensionality of entrepreneurial success. The specific model suggests that performance is impacted not only by individual traits, such as motivation/capabilities/education/skills, but also by factors that pertain to the context the business operates in and the efficiency of the processes adopted. The practical implementation of this framework supports Schumpeter's theory in the importance of traditional theories of performance-based entrepreneurship in regard to the entrepreneurial ecosystem and the utility of the innovations that can arise in the marketplace. In the case of women food vendors, the focal point of their training initiatives are aimed at building individual capacity and adaptive capabilities to address market conditions, it is feasible to suggest that through process innovation can emerge positively and are not limited by market constraints(Lans et al., 2008). The combination of training and innovative processes can result in an additional layer of synergy towards improved operational and business performance. Overall, these theories demonstrate that using the word "innovation" may be necessary, but

entrepreneurial training and education across the output of entrepreneurship can lead to innovation that drives business performance (Lans et al., 2008). Women food vendors have received training and, therefore, are, in most cases, better prepared to explore the involvement of an innovative process execution and therefore actively improving the previously stated processes along with accountability and responsiveness to market forces. This suggests that simply developing a pathway for training that promotes a culture of entrepreneurship allows innovation to enhance the performance of food businesses led by women.

## 2.6 Research Framework of Study

This study employs process innovation as a mediating variable to demonstrate the theoretical framework of Schumpeter's theoretical model and the Entrepreneurial Performance Model. Schumpeter's theory proposes that process innovation improves after investing in entrepreneur training ( $H_1$ ). Subsequently, process innovation is positively associated with business performance ( $H_2$ ). Process innovation also mediates this relationship ( $H_3$ ). The theoretical framework also includes the contextual factors of market competition and access to resources.

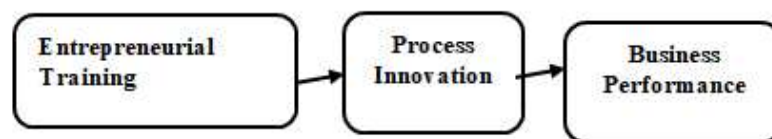


Figure 1. Conceptual Framework

This demonstrates a comprehensive picture of the relationship between training, innovation and performance among informal food vendors in Tanzania. Theoretical Framework

## 3. METHODOLOGY

### 3.1 Description of the Study Area

The study was conducted in three selected major markets of the Ilala Municipality of Dar es Salaam, Tanzania: Ferry, Buguruni, and Kisutu markets. In selecting the

locations for the field-based survey, the most women-dominated food markets were chosen, hence allowing analysis of how the intervention attributed to entrepreneurial training on process innovation and business performance (Karondo & Tumaini, 2021). Ilala Municipality is an economic center in Dar es Salaam, and it has a dominant informal economy of street vending of various foods that is the most common survival strategy for most poor families (Karondo & Tumaini, 2021). Their variations in customers base, size of operation, and access also made them a good choice to get a representative sample of women food vendors under different conditions. Moreover, previous research has underlined the socio-economic role of this market in maintaining the urban food supply chain and employment opportunities (Karondo & Tumaini, 2021), making its use in this study all the more valid.

### **3.2 Research Approach and Design**

This study employed quantitative research with cross-sectional survey design, whereby data might be collected once in time to observe associations between variables (Mehrad & Zangeneh, 2019). Quantitative approach was considered suitable as it offers scope for hypothesis testing statistically and inference of results back to the wider population (Danique Brown, 2015). Cross-sectional design was employed as it is a good method for collecting data for a large sample within a short period of time and is also convenient in the context of entrepreneurship behaviors and business performance indicators (Hair et al., 2019). Additionally, the design is in line with business research and innovation studies with structural equation modeling (SEM) employed to investigate mediation effects (Cepeda Carrión et al., 2016). Data was collected through the use of a standardized questionnaire to standardize information mining, which led to lower levels of bias and

increased research reliability (Mehrad & Zangeneh, 2019).

### **3.3 Population and Sample Size**

According to municipal trade records (Karondo & Tumaini, 2021), the target population was 616 women food vendors selling at the Ferry, Buguruni, and Kisutu markets. Using Krejcie and Morgan (1970), the sample size of 349 respondents was calculated at a 95% confidence level and an error margin of 5%. According to (Sarstedt et al., 2021), this sample is sufficient since partial least squares structural equation modelling (PLS-SEM) requires a minimum of 10 times the largest number of structural paths as the minimum desired sample size at any latent variable. A stratified random sampling method was used in order to achieve a proportionate response in the three markets, which helped increase the generalizability of the findings (Mehrad & Zangeneh, 2019). Moreover, the women should have been involved in food vending for at least one year to help develop relevance to the study objectives.

### **3.4 Measurement Variables and Research Instrument**

Multi-key item scales taken from previous research (Mkama, 2024)(Tambwe Ally Mariam, 2021) were applied to the measurement of key constructs. Adopting new food design processes, food not only taste but presentation appeal, having better food ordering process, improved food hygiene quality, customer-friendly and timely customer service, good food delivery systems (six indicators) were applied in measuring process innovation. Business performance was measured by six variables, i.e., (1) income growth, (2) customer satisfaction, (3) business expansion, (4) competitive pricing, (5) customer loyalty, and (6) speed of service. Five dimensions of entrepreneurial abilities were measured: (1) business skills, (2) technical skills, (3)

personal skills, (4) entrepreneurship skills, and (5) social/interpersonal skills. All the statements were rated on a 7-point Likert-type scale (1 = "Strongly Disagree"; 7 = "Strongly Agree") to detect subtlety responses and ensure maximum data variance (Ibrahim, in press). The data were gathered using a pre-tested structured questionnaire from 30 vendors for comprehensiveness and precision (Hair et al., 2020).

### 3.5 Data Analysis

The study employed Partial least squares structural equation modeling (PLS-SEM) to test the hypothesized relationships using SmartPLS 4.0 (Sarstedt et al., 2021). Since the PLS-SEM is capable of handling high mediation models, small- to medium-sample sizes, and nonnormality of data (Cepeda-Carrion et al., 2023), this method was chosen for analysis. The analysis was performed dually: (1) measurement model evaluation (reliability, convergent validity, and discriminant validity) and (2) structural model evaluation (path coefficients, effect sizes, and mediation analysis) (Hair et al., 2019). Mediation analysis was performed using bootstrapping (5,000 resamples) to determine the indirect effects' significance (Cepeda-Carrion et al., 2023). To determine the explanatory power of the model, predictive relevance ( $Q^2$ ) and goodness of fit indices for PLS-SEM were also checked (Shiau et al., 2019). This is well within the best research practices in business and innovation, where latent constructs need to be subjected to intense statistical testing (Memon et al., 2021)

## 4. FINDINGS

The empirical analysis of this research was conducted using partial least squares structural equation modeling (PLS-SEM), a

robust analytical method ideally suited for the application of predictive research models and intricate constructs (Sarstedt et al., 2021). The measurement model was first tested, and then an evaluation of the structural model was conducted.

### 4.1 Measurement Model

The measurement model was tested against the predefined reliability and validity criteria (Sarstedt et al., 2021). As shown in Table 1, all constructs exhibited adequate psychometric properties. Business Performance (BP) demonstrated high internal consistency with Cronbach's  $\alpha = 0.838$ ,  $\rho_a = 0.848$ , and composite reliability (CR) = 0.885. Convergent validity was achieved as the average variance extracted (AVE) of 0.608 exceeded the minimum requirement of 0.50 (Fornell, C., & Larcker, D. F. (1981), n.d.). Although all indicator loadings were above 0.70, BP\_2 (customer satisfaction) was recorded at 0.679 but was retained due to the theoretical significance of all items related to the construct (Sarstedt et al., 2021; Hair et al., 2020; Hair et al., 2019)

Reliability tests confirmed that Entrepreneurial Training (ET) had  $\alpha = 0.888$ ,  $\rho_a = 0.900$ , CR = 0.914, and AVE = 0.642. Regarding item reliability, all indicator loadings ranged from 0.677 (ET\_6) to 0.867 (ET\_2), all meeting acceptable standards. Process Innovation (PSI) also satisfied all reliability criteria ( $\alpha = 0.783$ ,  $\rho_a = 0.795$ , CR = 0.850), with an AVE of 0.532. The PSI\_3 loading (0.641) was slightly below the conventional cutoff but was retained to maintain content validity by recommendations from earlier research stages (Cepeda-Carrion et al., 2023)(Cepeda Carrión et al., 2016)

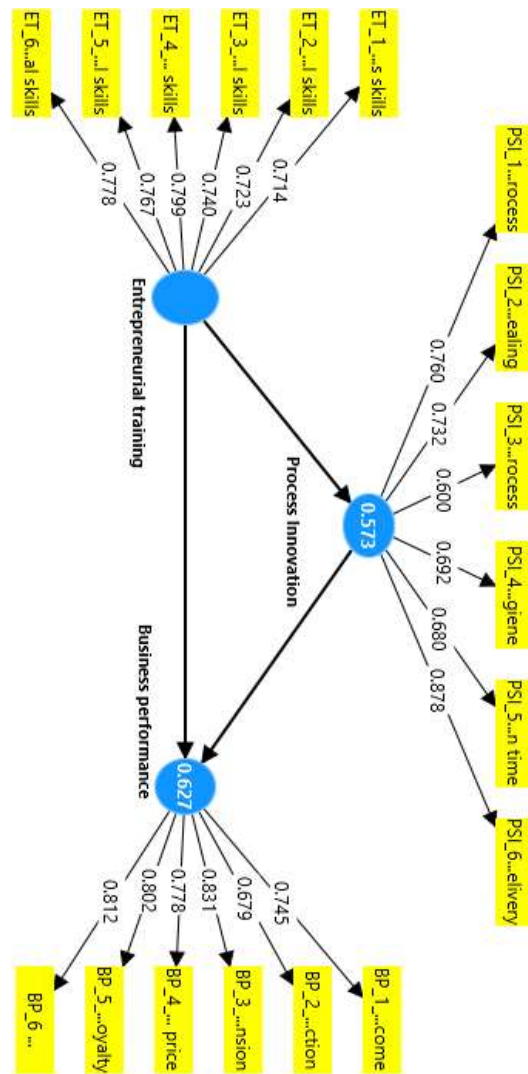


Figure 2. Measurement model

#### 4.2 Discriminant Validity

According to two complementary approaches, discriminant validity was established. First, the Fornell, C., & Larcker, D. F. (1981.), whereby the square root of the AVE of each construct (the diagonal elements in Table 2) was more significant than its highest correlation with any other construct, was applied. Namely, for BP, the  $\sqrt{\text{AVE}}$  (0.776) was higher than the correlations with ET (0.763) and PSI (0.717). The  $\sqrt{\text{AVE}}$  for ET (0.754) had exceeded its correlation with PSI (0.757), while the  $\sqrt{\text{AVE}}$  of PSI (0.728) was

consistently higher than for any construct in the inter-construct correlation.

#### 4.3 Structural Model Analysis

The first hypothesis (H1) stated that entrepreneurial training has a positive and significant effect on process innovation among women food vendors. This hypothesis was supported with a large path coefficient ( $\beta=0.757$ ,  $t=28.562$ ,  $p=0.000$ ). There is a strong relationship between entrepreneurial training and process innovation that is statistically significant. This means that entrepreneurial training not

only provides women food vendors with essential skills, it also cultivates a mindset for innovation in their businesses. The large ( $R^2=0.573$ ) indicates that entrepreneurial training accounts for 57.3% of the variance in process innovation that shows the

importance of entrepreneurial training as a key driver of process innovation among women food vendors. The large predictive relevance ( $Q^2 = 0.568$ ) provides evidence of the importance of entrepreneurial training to predict process innovation.

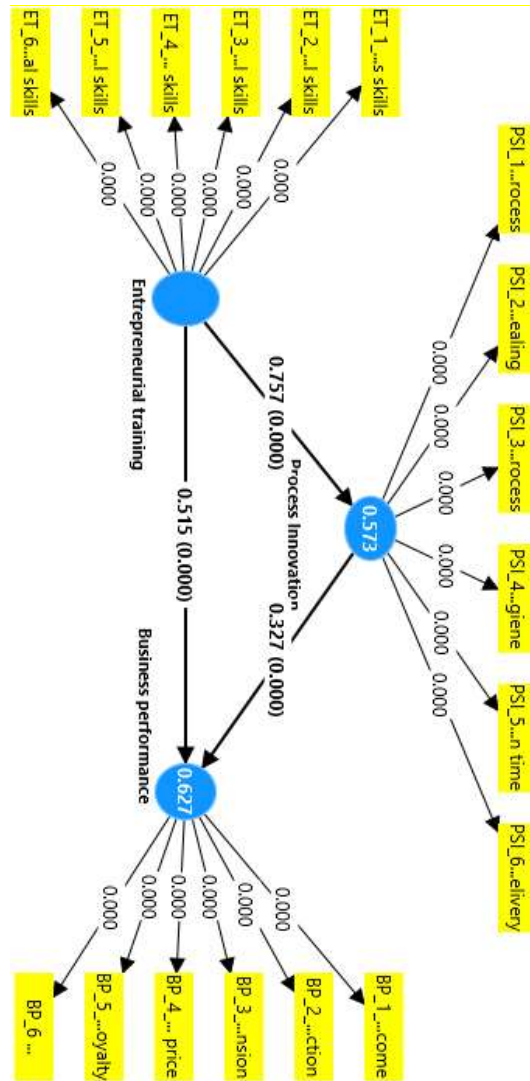


Figure 3. Structural Model

Concerning the second hypothesis (H2), the research assessed the effect of process innovation on the business performance of women food vendors. The results support this relationship as found ( $\beta= 0.327$ ,  $t= 5.870$ ,  $p=0.000$ ). This means that the process has a significant positive effect on business

performance. An  $R^2$  of 0.627 means process innovation explains around 62.7 % of the variation in business performance and good predictive relevance of  $Q^2 = 0.576$  illustrates how process innovation has considerable significance in terms of improving operational efficiency and overall

performance of these women-owned businesses. The study also indicated a small effect size ( $f^2 = 0.123$ ).

The third hypothesis ( $H_3$ ), explored whether process innovation, as a result of entrepreneurial training, explains the business performance of women food vendors. The findings support this hypothesis with ( $\beta=0.247$ ,  $t=5.786$ ,  $p=0.000$ ), indicating that process innovation partially mediate the relationship between entrepreneurial training and business performance. This suggests that the relationship between entrepreneurial training and business performance is significantly mediated by process innovation. The results depict a pathway through which entrepreneurial training enables women food vendors to innovate their processes, which in turn enhances their business performance. Although the direct effect is noteworthy, the mediation effect indicates that fostering innovation is crucial for translating training into tangible business results.

## 5. DISCUSSION OF FINDINGS

This study provides compelling evidence of the significance of the relationship between entrepreneurial training, process innovation and business performance of women food vendors in Ilala Municipality. The finding that entrepreneurial training positively affects process innovation is in line with some academic research that discusses the necessity of training programs to enhance features of entrepreneurial capabilities. This is affirmed by (Bauernschuster et al., 2009), who state that training creates an innovative mindset that is crucial to entrepreneurial success. The findings imply that when women food vendors undertake entrepreneurship training, there is a high degree of likelihood that they will create and enact new innovative processes in their businesses, which is an important mechanism for building sustainability and a

competitive advantage in a highly competitive market.

The strong effect of entrepreneurship training for women food vendors on process innovation is a clear example of how capacity building can engender some impactful shifts in business behavior. This is consistent with (Chell (2013) assertion that the types of skills one develops as an entrepreneur do more than just prepare entrepreneurs with the necessary tools toward competence, but also develop their confidence in entering into innovative endeavors. The data shows that when women develop aspects of entrepreneurship skills that include technical skills, business skills, personal skills, interpersonal skills, and social skills, they become more skilled at rethinking their processes in relation to the way their business operates. This finding supports a need for training that is specific to the requirements of women entrepreneurs. This training with contextual factors specific to women's environments can help with applicability and relevance. Establishing supportive enabling environments for training and skills development in entrepreneurship will potentially, for example, seek to relieve or address the systemic barriers to women as entrepreneurs and to their entrepreneurship, particularly in emergent markets.

The positive relationship between process innovation and business performance implies that innovation allows for greater operational efficiencies. This observation is consistent with the findings of (Aliyu et al., 2019) who confirmed innovation contributed more than a significant amount in helping women's entrepreneurs with their business performance. In this sense, process innovation enables women in food vending to be operate more efficiently while also providing higher value to consumers. Enhanced innovation in the food vending environment allows women food vendors to meet changing customer preferences and grow their business performance. The positive link between process innovation and

business performance further demonstrates innovation's ability to drive improved business performance. Process innovations allow operational efficiencies, enabling women entrepreneurs to enhance food appeal, food ordering practices, maintain food quality and hygiene, minimize operating costs, optimize food service delivery, and distinct food options in their market. These innovations are particularly important in food vending, which is typically highly competitive and often has low margins, with customer loyalty being key.

This demonstrates that process innovation is not only important for improving activities but can also provide value propositions that appeal to customers within the market. For example, (Cheng et al., 2014) show that, process innovation practices embedded into business process improve serving customers with courtesy, food quality, and food hygiene and food product delivery. This implies that women food vendors who leverage process innovation are likely to experience potential performance improvements but also an enhanced food design process, food attractiveness, food presentation ordering process.

Consequently, process innovation, identified as a mediating factor in the relationship between entrepreneurial training and business performance, continues to add to the advancement of innovation in entrepreneurship. The findings also aligned to Ramayah et al., (2020) study, which reported the significant influences of absorptive capacity and process innovations on business performance. The mediating role of process innovation provides a transformational pathway from which entrepreneurial training transfers to business success. The evidence indicates that some participants may have been stimulated or motivated by attending the program, but unless they translated the acquired knowledge into process innovations, there was unlikely to be a direct influence on their business performance. This complexity invites us to consider training models that do

not just focus on building knowledge and skills but encourage the application of innovative ideas to develop new processes in women's entrepreneurial business context.

The finding that process innovation is a mediator between entrepreneurial training and performance highlights the complexity of the relationship in addition to emphasizing the importance of focusing on an innovative strategy in training. This mediation means that entrepreneurial training is not enough; it must include a mechanism that allows the newly developed knowledge to be applied in practice, through innovation. (Al-Sa'di et al., 2017) have called attention to the role that innovation plays as a mediator between knowledge and training which may also affect performance, and this aligns with the findings in this study. This demonstrates that training should also foster practical components which can help cultivate an innovative mindset and creative problem solving skills along with providing factual information. For example, business skills, technical skills, personal skills, interpersonal skills, entrepreneurship skills and social skills will help participants translate entrepreneurial actions into tangible innovations.

This research expands existing literature and substantiates the triadic relationship between entrepreneurial training, process innovation, and performance. The authors suggest that to increase training support for women food vendors, the focus should be on creating an innovative culture for their businesses. These programs can help women entrepreneurs develop the skills, confidence, and tools to properly innovate and keep their businesses running in an increasingly competitive marketplace.

## **6. Practical Implications**

This study underscores the importance of integrating process innovation into entrepreneurial training for women who are food vendors, providing a means for

improved business outcomes. Participants emphasize the need for customized training programs so that stakeholders can implement changes to the implementer's operation either directly or indirectly. Furthermore, training based on process innovation provides women with the requisite skills to appreciate and adapt to shifting consumer counts and, therefore enhancing their competitiveness. Policymakers are provided

with a valuable opportunity to support advancements that would bring attention to methods of practical training to advance the use of process innovation. Policymaker support will not only promote better individual business outcomes for women, but will also facilitate overall economic empowerment of women in Tanzania's informal economy.

**Table 1.** Validity and Reliability

construct	indicators	Loadings	Cronbach's $\alpha > 0.70$	$\rho_a > 0.70$	CR > 0.70	AVE > 0.50
Business Performance			0.867	0.876	0.900	0.602
	BP_1 Increase income	0.745				
	BP_2 Customer satisfaction	0.679				
	BP_3 food vendors expansion	0.831				
	BP_4 Competitive price	0.778				
	BP_5 Customer loyalty	0.802				
	BP_6 service speed	0.812				
Entrepreneurial Training			0.848	0.849	0.888	0.569
	ET_1 Business skills	0.714				
	ET_2 Technical skills	0.723				
	ET_3 Personal skills	0.740				
	ET_4 Entrepreneurship skills	0.799				
	ET_5 Social skills	0.767				
	ET_6 Interpersonal skills	0.778				
Process innovation			0.819	0.835	0.87	0.531
	PSI_1_a new food design process	0.760				
	PSI_2 Food appealing	0.732				
	PSI_3 Food Ordering Process	0.600				
	PSI_4_Quality of food hygiene	0.692				
	PSI_5_Serving customer with kindness and on time	0.680				
	PSI_6 Food delivery	0.878				

BP - Business Performance, ET- Entrepreneurial Training, PSI- Process innovation

**Table 2.** Discriminant Validity

	BP	ET	PSI
Business performance	0.776		
Entrepreneurial training	0.763	0.754	
Process Innovation	0.717	0.757	0.728

BP=Business performance, ET-Entrepreneurial training, PSI=Process innovation

**Table 3.** The Direct and Indirect Effects

hypothesis	Relation	Beta	T-statistic	P-Values	Findings	R2	F2	Q2
H1	ET--->PSI	0.757	28.562	0.000	Supported	0.573	1.344	0.568
H2	PSI--->BP	0.327	5.870	0.000	Supported	0.627	0.123	0.576
H3	ET--->PSI--->BP	0.247	5.786	0.000	Supported			

BP=Business performance, ET=Entrepreneurial training, PSI=Process innovation

## 7. CONCLUSIONS

In summary, the results of this study confirm the importance of process innovation as a mediator of the relationship between entrepreneurial training and business performance among female food vendors in the Ilala Municipality. Since female entrepreneurship serves as a foundational element in achieving economic development, it would be important to have training programs that promote innovation. This research indicates a need for curriculum specifications to be more relevant to the context the women operate in, given the specific and unique constraints the women face. The next phase of this much-intervention work should focus on practical

training that provides education for an innovative mindset to spur practical business improvements. The findings provide valuable information to policymakers when developing initiatives aimed at empowering women food vendors through programs that support long-term sustainable economic growth in the specific context of the informal sector.

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