

RESEARCH

Open Access



# Exploring factors that determine the innovation of micro and small enterprises: the role of entrepreneurial attitude towards innovation in Woldia, Ethiopia

Erstu Tarko Kassa\*  and Tilahun Getnet Mirete

\*Correspondence:  
erstu0910@gmail.com;  
erstu.t@wldu.edu.et  
Woldia University, Woldia,  
Ethiopia

## Abstract

To transform micro and small enterprises to large companies, owners need to strive to launch new methods, systems, ways and innovations. Accordingly, innovation helps micro-enterprises to bounce to achieve fundamental change in their businesses. Micro and small enterprises are exposed by different factors to innovating new products and services. This study, therefore, focused on exploring factors that determine the innovation of service and manufacturing MSEs: the role of entrepreneurial attitude towards innovation in Woldia city administration. The researchers used a cross-sectional research design and followed a quantitative approach. The data were collected by using a structured questionnaire. The collected data were analysed by using SPSS v-25 and Amos graphics to conduct descriptive, factor, correlation, regression and path analysis. The study finding revealed that government support, access to infrastructure, entrepreneurial training, entrepreneurial attitude and the leadership of the owners significantly affected the innovation of service and manufacturing MSEs. Entrepreneurial training and leadership of the owners directly and indirectly affected the innovation of services and manufacturing MSEs through the mediating variable of entrepreneurial attitude.

**Keywords:** Innovation, Leadership, Attitude, Entrepreneurial training, Government support, Access to infrastructure

## Introduction

Innovation plays a substantial role in easing the life of human beings. History of humankind assured that the current world civilization was not achieved without innovation and advanced technological development. It was innovation that brought an overall impact on the change of human life, national economy, and social changes (Meissner & Kotsemir, 2016).

In recent times, the world economy is affected by different economic, social, and cultural changes. The globalization process, competition with multinational national companies, and dramatic change of technologies lead companies to innovate products,

services, and other businesses. This improvement and innovation bring an impact on the life of people throughout the world (Nikolaidis et al., 2013). Innovation is a means for the developed countries to become competitive and create a distinctive competence by enhancing their efforts towards research and development (de Oliveira Sousa et al., 2020). Likewise, it has an importance for micro and small enterprises to be competitive, to develop new products and services, and to transform into medium and large enterprises (Price et al., 2013).

Governments of the developing countries have currently given priority to enhancing creativity and innovation of the enterprises. Innovative enterprises can; thus, create jobs, become competitive enterprises, and enhance the income level of their owners (Daksa et al., 2018). In Kenya, for instance, 90% of micro and small enterprises need to improve the overall activities by technological innovation (Aduda & Kaane, 1999). Similarly, the role of micro and small enterprises for the economic growth in Ethiopia is irreplaceable in terms of launching new technologies, supporting science, facilitating innovation activities, and diffusion for policy formulation framework (Daksa et al., 2018).

Nonetheless, regarding innovation, the number of empirical studies conducted in Africa is relatively limited. These prior studies primarily focused on assessing the performance and growth of the enterprises (Abdu & Jibir, 2017). In Ethiopia, the empirical studies that were conducted on the concept of innovation by relating it with the micro and small enterprises are too limited.

The innovativeness of micro and small enterprises is affected by different factors such as the availability of resources, capacity, skills, and motivation of the owners (de Oliveira Sousa et al., 2020). In Ethiopia, micro and small enterprises have been unable to enhance creativity and innovation because of the different challenges they face. The challenges that become an obstacle for the enterprises are lack of processed technological information, inadequate training capabilities at technical and vocational education training, lack of access to financial and other resources, absence of consultancy support, poor infrastructural base, and unfavourable government policies which weaken their innovation activities (Daksa et al., 2018).

The main reason that motivated the researchers to undertake this study was that the previous studies considered all types of enterprises such as trade, manufacturing, service, and construction enterprises. However, this study has given due emphasis for service and manufacturing sectors only. The second gap that motivated the researchers was that the previous studies examined institutional or individual factors only, while this study examined both individual and institutional factors that determine the innovation of micro and small enterprises in the Woldia city administration. The third reason that motivated researchers was that entrepreneurial attitude was examined as mediating variable between the entrepreneurial training and leadership of the owners towards innovativeness of micro and small enterprises (MSEs). The last gap that triggered the researchers was that the studies that were conducted in relation to innovation in Ethiopia and in the study area are limited.

This study; therefore, tried to examine the factors that determined the innovation of service and manufacturing enterprises. The factors considered in this study are the entrepreneurial attitude of owners, access to infrastructure, government support, the leadership of the owners, and entrepreneurial training. In the study, the researchers have

examined the factors that affected the innovation of the enterprises positively and negatively. Hence, the objective of the study was to explore the factors that determined the innovation of service and manufacturing enterprises in the Woldia City Administration.

### **Literature review**

Innovation is a key driver of technological development and economic growth. It provides a means of satisfying the demands of the current market and the potential needs of future markets. Similarly, it is achieved through more effective products, processes, services, or technologies that are readily available to the current market (Raghupathi & Raghupathi, 2017).

According to Price et al. (2013), innovation is defined as the ability to create new value propositions through offering new products and services; adopting new operating practices: technological, organizational, or market-oriented; or creating new skills and competencies (Schumpeter, 1947). It is often linked with creating a sustainable market around the introduction of new and superior products or processes. Specifically, in the literature on the management of technology, technological innovation is characterized as the introduction of a new technology-based product into the market (Carayannis et al., 2015). Increasingly, innovation in new products/services and the implementation of key processes are becoming vital sources for firm competitive advantage (Liao et al., 2009; Rumelt, 1984).

What is more, innovation is propelled by the creative exertion that drives socio-economic and scientific progress, with the mediation of a wide range of specialists working in both the public and private sectors. Also, it requires short-term investment in the hope of long-term returns (Alawamleh et al., 2019).

In Ethiopia, especially women enterprise owners are affected by socio cultural barriers, multiple responsibilities, underdeveloped enterprise culture and other factors to achieve their objectives and to become innovative (Beriso, 2021). According to Daksa et al. (2018) Product and/or process innovations in Ethiopia also can be exercise by four types of innovations (that is, a new product innovation, a new method of production innovation, a new marketing innovation, and a new organizational structure).

### **Factors that determine the innovation of micro and small enterprises**

There are a number of factors that determine the innovativeness of micro and small enterprises. Among the factors that determine the innovation of enterprises are firm size and age, research and development (R&D) efforts, the quality or skill level of managers/employees, employee participation and motivation, managerial practices and inter-departmental cooperation and knowledge exchange, firm's network and its interactions with outside organizations, and factors specific to the industry (Egbetokun et al., 2016). The competition among the enterprises is the other factor that leads the enterprises to be innovative. When there is strong competition, an enterprise can adopt innovations (Chesbrough & Crowther, 2006; Frishammar & Ake Horte, 2005; Nguyen, 2007; Nicita et al., 2005; Santamaría et al., 2010). By the same token, competition helps an enterprise to survive, achieve growth, constantly nurture the environment and significant piece of its outer condition, and improve operational execution (Soini & Veseli, 2011; Ngibe & Lekhanya, 2020; Beach, 2017; Pickard-Whitehead, 2018; Zelga, 2017).

The first factor that is able to determine the innovation of micro and small enterprises is the *entrepreneurial training* cascaded to the owners of the enterprises. Training helps owners to gain a competitive advantage by coordinating the available resources (Barney & Wright, 1998). Besides, manpower development should be supported by investment, knowledge, skills, and competence to achieve the transformation of the enterprises (Becker, 1964). Different studies' results confirmed that there is a strong and positive relationship between human resource training and the performance and innovation of the enterprises (Zheng et al., 2006). Empowerment, promotion from within, training, and skill development are among the notable practices having great value to an organization to become innovative (Rosli, & Mahmood, 2013).

The other concern that was planned to be investigated in this study was the effect of entrepreneurial training on the entrepreneurial attitude of the owners. Entrepreneurial education or training has a direct effect on change regarding the attitude of the trainees at the workplace and the school level (Cui et al., 2019; Ndou et al., 2018). Training and education are the best options to enhance creativity and change the attitude of the entrepreneurs (Pounder & Devonish, 2016; Varela & Jiménez, 2001). Owners who are trained in entrepreneurship training, are motivated to establish an independent business, increase their attitude, interest, and inspiration (Rahayu et al., 2014). Previous findings suggest that attitudes are partly derived from prior exposure to entrepreneurship education. Empirical evidence (Malebana, 2012) confirms that exposure to entrepreneurship education influences students' attitudes towards behaviour. Entrepreneurship education enables operators to enhance awareness and skills of entrepreneurship and provides students with alternative careers as entrepreneurs. Thus, training is a means to adjusting the attitude of entrepreneurial attitudes (Herta, 2018; Ratten & Jones, 2020). Hence, we have proposed the following hypotheses:

**H<sub>1</sub>:** Entrepreneurial training has a positive significant effect on the innovation of service and manufacturing micro and small enterprises.

**H<sub>2</sub>:** Entrepreneurial training has a positive significant effect on the entrepreneurial attitude of manufacturing micro and small enterprise owners.

The second factor that determined the innovation of the enterprises was *the entrepreneurial attitude of the owners* to bring innovation for their enterprises. Attitude refers to affective growth, especially in terms of values. The development of a positive attitude is desirable for learners to innovate new products and services. Transformation in attitude helps change learners' perception and self-directing their lifelong learning (Sze-yeng & Hussain, 2012). Likewise, it helps to create an innovative culture in the enterprises. The owners may be triggered to test new ways and systems if and only if their attitudes have been changed (Shukla & Singh, 2015). Thus, we will look for combination of the above factors that lead the owners to innovation:

**H<sub>3</sub>:** Entrepreneurial attitude of the owners has a positive significant effect on the innovation of service and manufacturing micro and small enterprises.

The third variable that was considered in this study was *access to infrastructure*. It refers to the basic equipment, facilities, and structures such as roads, bridges, electricity, telecommunication, education, water supply, sanitation, and sewerage, which are government created services essential for the operations and functionality of manufacturing micro and small enterprises (Gaal & Afrah, 2017). Lack of good infrastructure may become an

obstacle for the enterprises' owners to create new products and services. Infrastructures such as electricity, road, water, and access to financial service and others are the base for the innovation of the enterprises (Perkins & Robbins, 2011). Transportation and internet services can also affect the innovation of the enterprises (Agwu & Emeti, 2014). Based on the above discussion, we have posited the following:

**H<sub>4</sub>:** Access to infrastructure has a positive significant effect on the innovation of service and manufacturing micro and small enterprises.

The fourth factor treated in this study was *government support*. Government can influence enterprise owners positively and negatively for innovation. Government can establish policies to promote innovation and also develop barriers by enacting rules and regulations. It can provide initial capital and full support or offer non-monetary subsidies, such as places for knowledge exchange, information, patents, and research and development activities (Doblinger et al., 2019). The government's role is very important for research and development to enhance innovation in micro and small enterprises (Fritsch & Slavtchev, 2011; Howells, 1999). Hence, based on the above discussion the hypothesis of this variable would be:

**H<sub>5</sub>:** Government support has a positive significant effect on the innovation of service and manufacturing micro and small enterprises.

The last factor that was incorporated in this study was the *leadership of the owners* that is practised in the business operation. Leadership plays a significant role in managing the innovation of the organization (Smith et al., 2008). Transformational leaders are appropriate for change and innovation of the organization to launch dramatic change (Daft, 2020). The leadership of the enterprises is better to link with their strategy. Unlike transformational leadership, other leadership styles such as dictatorial or authoritarian are not suitable to enhance the innovation of the enterprises (Koroleva & Moiseev, 2012).

The other relationship that was assessed in this study was the effect of the owners' leadership on the entrepreneurial attitude. The perceptions of the owners' leadership features have partial connections with their innovativeness inclination or attitude (Ayranci & Ayranci, 2015). The leadership of the owners has a positive effect on the creativity of the workers and helps to change the attitude of the workers to innovate new ways and systems (Cai et al., 2019). Employees' leadership attributes, independently, have a significantly positive effect on work-related attitudes in enterprises and other organizations (Karia & Asaari, 2019). Based on the above discussion, we have proposed the following hypotheses:

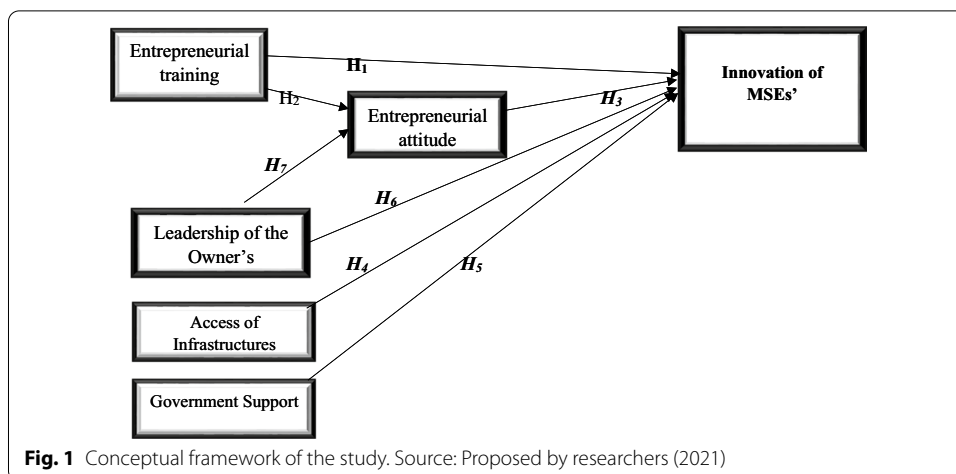
**H<sub>6</sub>:** Leadership of the owners has a positive significant effect on the innovation of service and manufacturing micro and small enterprises.

**H<sub>7</sub>:** Leadership of the owners has a positive significant effect on the entrepreneurial attitude of the owner of service and manufacturing micro and small enterprises.

To conclude based on the above theoretical review and discussion, the conceptual framework of the study is proposed as follows (Fig. 1).

## Materials and methods

The researchers used a cross-sectional research design. This design helps to collect the data at one shot of time from the study area. This study was conducted in Woldia City, East Amhara, Ethiopia. Woldia City is located in the north part of Ethiopia in Amhara regional state at a distance of 503 km from Addis Ababa and 2112 m above sea level.



The approach followed by the researchers was a quantitative research approach, which supported to analyse numerical data of the research collected from the respondents.

The target population of the study were 871 micro and small enterprises in Woldia city administration, of which, 592 service and 279 manufacturing micro and small enterprises. The sampling technique used by the researchers was stratified sampling technique. The strata were made for the service and manufacturing sectors operating in the city administration. Based on the strata, the target respondents were selected by using a systematic random sampling technique. The main reason for the researchers to select this technique was that the city administration technical and vocational development office has the list of enterprises. Hence, based on the list of enterprises the researchers have selected the right respondents for this study by using systematic random sampling technique.

The sample size has also been determined by using Yamane (1967) formula and proportional technique from each business type. Thus, the formula is described as follows:

$$n = \frac{N}{1 + N(e)^2},$$

where  $N$  = target population,  $n$  = sample size,  $e$  = error term,

$$n = \frac{871}{1 + 871(0.05)^2},$$

$$n = 274.$$

Therefore, by proportional method, 186 respondents from service and 88 from manufacturing micro and small enterprises operators have been selected. Regarding the instruments of the study, the researchers used structured questionnaires to collect data from selected respondents. For the variable entrepreneurial attitudes 5 items from Ma et al. (2020); for leadership of the owner 6 items from Rush et al. (1977); for the access of infrastructure 5 items from Abera (2012); for government support 5 items from Ma et al. (2011); for entrepreneurial training 4 items from Rosli and Mahmood (2013); and for the

innovation of service and manufacturing micro and small enterprises 7 items from Kalay and Gary (2015) were adapted. The overall value of each index is counted as an average of the items included in the index. In total, our questionnaire comprised of 31 items measuring the 6 constructs. Each item was assessed by the responses from a five-point scale, and from the total items 5 items were removed after conducting factor analysis. The details are described in Table 1.

The collected data were analysed by using descriptive statistics, correlation, regression and path analysis. The software utilized in this study was SPSS version 25 for descriptive and correlation analysis, and SPSS AMOS 23 version for path analysis especially for indirect effect.

### Results and discussion

From the total 274 respondents, 268 respondents' questionnaires were returned and analysed in this study. The remaining 6 questionnaires were disqualified because of incompleteness after checking the quality of collected data. Hence, the response rate of the study was 97.81%.

Related with the demographic variables, from the total population, 38.8% were female and the remaining 61.2% were male. The respondents' age category in Table 2 shows that 42.5% of the respondents were below the age of 30 years, 28.7% between 30 and 40 years, 23.5% between 41 and 50 years and the remaining were categorized under the age of above 50 years.

Concerning the education level of the respondents, 13.8% had a qualification below diploma, 57.1% had diploma and the remaining were degree and above holders. Regarding the enterprises that engaged in the study area, 32.5 of the respondents were engaged in manufacturing and the remaining were operating service businesses.

### Factor analysis of the study constructs

Before conducting factor analysis, checking whether the data are suited or not is a pre-condition. To check the data adequacy for the factor analysis, KMO and Bartlett's test are the best methods. The study data's KMO and Bartlett's test value is suited for the factor analysis because the value is between the ranges of 0.8 to 1 (Kaiser, 1970). The study

**Table 1** Reliability test

| Variables                | Items  | Cronbach's alpha |       | Number of removed items after factor analysis |
|--------------------------|--|------------------|-------|---|
|                          |  | Value            | Items |   |
| Entrepreneurial attitude | EtAt1, EtAt2, EtAt3, and EtAt4                                 | 0.860            | 4     | EtAt5   |
| Access to infrastructure | Aclnf7, Aclnf6, Aclnf8, and Aclnf9                             | 0.804            | 4     | Aclnf10                                       |
| Government support       | GovSup12, GovSup14, GovSup13, Gov-Sup15                        | 0.915            | 4     | GovSup11                                      |
| Leadership of the owner  | LeadOw16, LeadOw17, LeadOw19, LeadOw18, and LeadOw20           | 0.921            | 5     | LeadOw21                                      |
| Entrepreneurial training | EntTr23, EntTr24, and EntTr25                                  | 0.864            | 3     | EntTr22                                       |
| Innovation of MSEs       | InnMSE26, InnMSE27, InnMSE28, InnMSE29, InnMSE30, and InnMSE31 | 0.905            | 6     |   |

**Table 2** Demographic variables

| Variables          | Frequency | Percent |
|--------------------|-----------|---------|
| Sex                |           |         |
| Male               | 164       | 61.2    |
| Female             | 104       | 38.8    |
| Age of respondents |           |         |
| Below 30           | 114       | 42.5    |
| 30–40              | 77        | 28.7    |
| 41–50              | 63        | 23.5    |
| Above 50           | 14        | 5.2     |
| Education level    |           |         |
| Below diploma      | 37        | 13.8    |
| Diploma            | 153       | 57.1    |
| Degree and above   | 78        | 29.1    |
| Type of sectors    |           |         |
| Manufacturing      | 87        | 32.5    |
| Service            | 181       | 67.5    |

Source: Own Survey (2021)

**Table 3** KMO and Bartlett's test result

|   |                    |          |
|---|--------------------|----------|
| Kaiser–Meyer–Olkin measure of sampling adequacy |                    | 0.888    |
| Bartlett's test of sphericity                   | Approx. Chi-square | 4877.172 |
|   | <i>Df</i>          | 325      |
|   | Sig.               | 0.000    |

Source: Own survey (2021)

data's KMO and Bartlett's test result shown in Table 3 is 0.888. This result assured that the data are acceptable to conduct factor analysis of the study.

The pattern matrix of the study included the coefficient for the linear relationship of variables. The pattern in Table 4 shows the loadings of the items, with six items loading above 0.5 levelled on component 1, five items on component 2, four items on component 3, four items on component 4, three items on component 5 and the remaining 4 items were levelled on component 6. The loading of all the items was above 0.5. Hence, this result can be a confirmation for further analysis in the study such as path analysis, regression, correlation and other analysis.

The other results such communalities table, total variance explained table and scree plot figure are attached in Additional file 1.

#### Multicollinearity test of the study variables

To check the multicollinearity of the study variables, the variance inflation factor (VIF) of each independent variable must be below 4.0. As shown in Table 5, the VIF result is 1.655 for entrepreneurial attitude, 1.626 for access to infrastructures, 1.704 for government support, 1.524 for leadership of the owners, and 1.12 for entrepreneurial training. Therefore, it is an evidence that there is no multicollinearity problem within independent variables of the study because the VIF value of each independent variable of the study is below the cut-off point of 4.0 (Garson, 2012).



**Table 4** Pattern matrix of the study

|          | Component |       |       |       |       |       |
|----------|-----------|-------|-------|-------|-------|-------|
|          | 1         | 2     | 3     | 4     | 5     | 6     |
| InnMSE27 | 0.870     |       |       |       |       |       |
| InnMSE29 | 0.853     |       |       |       |       |       |
| InnMSE30 | 0.846     |       |       |       |       |       |
| InnMSE31 | 0.809     |       |       |       |       |       |
| InnMSE26 | 0.784     |       |       |       |       |       |
| InnMSE28 | 0.700     |       |       |       |       |       |
| LeadOw16 |           | 0.948 |       |       |       |       |
| LeadOw17 |           | 0.928 |       |       |       |       |
| LeadOw20 |           | 0.817 |       |       |       |       |
| LeadOw19 |           | 0.816 |       |       |       |       |
| LeadOw18 |           | 0.782 |       |       |       |       |
| GovSup12 |           |       | 0.905 |       |       |       |
| GovSup14 |           |       | 0.890 |       |       |       |
| GovSup13 |           |       | 0.870 |       |       |       |
| GovSup15 |           |       | 0.864 |       |       |       |
| EtAt2    |           |       |       | 0.918 |       |       |
| EtAt3    |           |       |       | 0.863 |       |       |
| EtAt1    |           |       |       | 0.822 |       |       |
| EtAt4    |           |       |       | 0.756 |       |       |
| EntTr23  |           |       |       |       | 0.889 |       |
| EntTr24  |           |       |       |       | 0.888 |       |
| EntTr25  |           |       |       |       | 0.854 |       |
| Aclnf8   |           |       |       |       |       | 0.879 |
| Aclnf9   |           |       |       |       |       | 0.799 |
| Aclnf6   |           |       |       |       |       | 0.711 |
| Aclnf7   |           |       |       |       |       | 0.611 |

Extraction method: principal component analysis  
 Rotation method: Promax with Kaiser normalization  
 Rotation converged in 7 iterations  
 Source: Own Survey (2021)

**Table 5** Multicollinearity test

| Variables                 | Tolerance | VIF   |
|---------------------------|-----------|-------|
| Entrepreneurial attitude  | 0.604     | 1.655 |
| Access to infrastructures | 0.615     | 1.626 |
| Government support        | 0.587     | 1.704 |
| Leadership of the owner   | 0.656     | 1.524 |
| Entrepreneurial training  | 0.893     | 1.120 |

Source: Own Survey (2021)

**Association analysis of the study variables**

As shown in Table 6, the relationship between the study’s dependent variable with independent variables was statistically significant. The relationship between entrepreneurial training with the innovation of micro and small enterprises was negative and

**Table 6** Correlation of the study variables

| Variables                         |                     | EtAt     | AcInf   | GovSup  | LeadOw  | EntTr    | InnMSE |
|-----------------------------------|---------------------|----------|---------|---------|---------|----------|--------|
| Entrepreneurial attitude (EtAt)   | Pearson correlation | 1        |         |         |         |          |        |
|                                   | Sig. (2-tailed)     | 0.000    |         |         |         |          |        |
| Access to infrastructures (AcInf) | Pearson correlation | 0.583**  | 1       |         |         |          |        |
|                                   | Sig. (2-tailed)     | 0.000    |         |         |         |          |        |
| Government support (GovSup)       | Pearson correlation | 0.425**  | 0.403** | 1       |         |          |        |
|                                   | Sig. (2-tailed)     | 0.000    | 0.000   |         |         |          |        |
| Leadership of the owner (LeadOw)  | Pearson correlation | 0.277**  | 0.313** | 0.560** | 1       |          |        |
|                                   | Sig. (2-tailed)     | 0.000    | 0.000   | 0.000   |         |          |        |
| Entrepreneurial training (EntTr)  | Pearson correlation | - 0.135* | - 0.119 | 0.145*  | 0.204** | 1        |        |
|                                   | Sig. (2-tailed)     | 0.027    | 0.051   | 0.018   | 0.001   |          |        |
| Innovation of MSEs' (InnMSE)      | Pearson correlation | 0.547**  | 0.565** | 0.420** | 0.347** | - 0.127* | 1      |
|                                   | Sig. (2-tailed)     | 0.000    | 0.000   | 0.000   | 0.000   | 0.038    |        |

\*Correlation is significant at the 0.05 level (2-tailed) and \*\*. Correlation is significant at the 0.01 level (2-tailed)

Source: Own Survey (2021)

**Table 7** Regression weights of the study constructs

|        |     |        | Estimate | S.E   | C.R     | p     |
|--------|-----|--------|----------|-------|---------|-------|
| EtAt   | < - | LeadOw | 0.280    | 0.051 | 5.517   | ***   |
| EtAt   | < - | EntTr  | - 0.179  | 0.052 | - 3.466 | ***   |
| InnMSE | < - | GovSup | 0.101    | 0.037 | 2.736   | 0.006 |
| InnMSE | < - | AcInf  | 0.337    | 0.051 | 6.650   | ***   |
| InnMSE | < - | EtAt   | 0.255    | 0.047 | 5.395   | ***   |
| InnMSE | < - | EntTr  | - 0.085  | 0.041 | - 2.089 | 0.037 |
| InnMSE | < - | LeadOw | 0.107    | 0.041 | 2.595   | 0.009 |

Source: Own Survey (2021)

\*\*\*Significant less than 0.001

statistically significant. Likewise, the relationship between entrepreneurial attitude with entrepreneurial training was negative and statistical significant.

The other independent variables had a positive relationship with the dependent variable and also had a positive statistical significant relationship with each of the other remaining independent variables.

**Effect analysis of the study variables**

The regression results shown in Table 7 indicated that leadership of the owners had a direct effect on the entrepreneurial attitude. When leadership goes up by 1, attitude of owners goes up by 0.28 with a statistical significant level. The entrepreneurial training had significant effect on the entrepreneurial attitude of the service and manufacturing micro and small enterprises owners. When entrepreneurial training goes up by 1, the entrepreneurial attitude goes down by 0.179. The study variable, government support, affected the innovation of service and manufacturing micro and small enterprises innovativeness by 0.0101 ( $p < 0.006$ ).

The access to infrastructure variable positively affected the innovativeness of micro and small enterprises. When the access to infrastructure goes up by 1, innovation of

MSE goes up by 0.337 with statistical significant level. The other variable, entrepreneurial attitude, had a positive significant effect on the innovation of micro and small enterprises. The entrepreneurial training also affected the innovation of the micro and small enterprises negatively. When entrepreneurial training goes up by 1, innovation of MSE goes down by 0.085. The last variable that affected the innovation of service and manufacturing micro and small enterprises is leadership of the owners. As shown in Table 7, when leadership of the owners goes up by 1, innovation of service and manufacturing micro and small enterprises goes up by 0.107.

#### **Indirect effects of the study variables**

The indirect (mediated) effect of entrepreneurial training on innovation of micro and small enterprises was  $-0.046$ . That is, when entrepreneurial training goes up by 1, innovation of service and manufacturing micro and small enterprises goes down by 0.046.

The indirect (mediated) effect of leadership of owners on innovation of service and manufacturing micro and small enterprises was 0.071. That is, when the effort of leadership of owners goes up by 1, innovation of service and manufacturing micro and small enterprises goes up by 0.071 (Kline, 1998).

#### **Discussion**

This study primarily focused on investigating the direct and indirect effects of institutional and individual factors or variables towards the innovativeness of service and manufacturing micro and small enterprises. From the examined institutional factors, government support was the main factor that affected the enterprises innovation in the study area. When the government support becomes wide-ranging, the enterprises' owners become motivated to create new products and services. Therefore, the proposed hypothesis that government support has a positive significant effect on the innovation of service and manufacturing micro and small enterprise has been supported by the study finding with the coefficient of 0.101 with a statistical significant value ( $p=0.06$ ) (Doblinger et al., 2019; Fritsch & Slavtchev, 2011; Howells, 1999). This finding is consistent with study accompanied by Thongsri and Chang, (2019).

The variable, access to infrastructures such as internet, finance, electricity, road, and water had a positive influence on enhancing the innovativeness of micro and small enterprises. Without infrastructure, it may be difficult to think about innovation. The regression result in Table 7 supported that access to infrastructure had a positive statistical significant effect on the innovation of service and manufacturing micro and small enterprises. Hence, the hypothesis proposed by the researchers, access to infrastructure has a positive significant effect on the innovation of service and manufacturing micro and small enterprise, has been accepted (Agwu & Emeti, 2014; Gaal & Afrah, 2017; Perkins & Robbins, 2011).

The change in the attitude of the business operators is basic to launch creativity and innovation in their businesses. When an owner becomes reluctant to try new ways and methods in his/her business, he/she fails to achieve continuous improvement and innovation. In view of that, this study tried to explore the attitude of owners towards innovation. The study regression result shown in Table 7 indicates that the attitude of the owners significantly affected the innovation of service and manufacturing micro and

small enterprises. Thus, the hypothesis the researchers posited, entrepreneurial attitude of the owners has a positive significant effect on the innovation of service and manufacturing micro and small enterprises became accepted and supported by the researchers Sze-yeng and Hussain (2012) and Shukla and Singh (2015)).

Micro and small enterprise owners can equip themselves with formal education, experiences, on-the-job-training and off-the-job-trainings. When the cascaded training quality becomes less, the contribution of training towards innovation will not be substantial. In this study, the effect of entrepreneurial training on the innovation of micro and small enterprises was examined. The Amos regression result indicated in Table 7, showed that the entrepreneurial training negatively affected the innovation of service and manufacturing micro and small enterprises in the study area with significant statistical level ( $p < 0.05$ ). Based on the theoretical review of the study, the researchers have proposed that entrepreneurial training has a positive significant effect on the innovation of service and manufacturing micro and small enterprise, which has been rejected by the finding. This result is contradicts with the finding of Barney and Wright (1998), Zheng et al. (2006) and Rosli and Mahmood, (2013).

A recent survey found that among companies that are successful innovators, 80 percent have top leaders who frequently reinforce the value and importance of innovation (Daft, 2020). Similarly, service and manufacturing micro and small enterprises can exercise a leadership in their work place to enhance their performance and the innovation. The transformational leadership is the best example that transform the organization from dummy to innovative (Daft, 2020). The owners can motivate their workers to create new systems, products and services. In this study, the effect of leadership of the owners on the innovation of the enterprises was examined. The study finding indicated in Table 7 showed that the leadership of the owners significantly affected the innovation of micro and small enterprises with coefficient of 0.107 and a positive significant level ( $p < 0.05$ ). As a result, the proposed hypothesis that the leadership of the owners has a positive significant effect on the innovation of service and manufacturing micro and small enterprises has been accepted and supported by the study of Smith et al. (2008) and Koroleva and Moiseev (2012).

The other relationship that is considered in this study was the effects of entrepreneurial training and leadership of the owners on the change of entrepreneurial attitude. Trainings are helpful to change the attitude of learners or trainees. An entrepreneurial minded owner can bring new insight for his/her business. However, the training may not bring attitudinal change as expected. As the Amos regression result in Table 7 indicated, entrepreneurial training negatively affected the attitude of entrepreneurs towards innovation by the coefficient of  $-0.179$  with a significant level ( $p < 0.05$ ). Therefore, the hypothesis that entrepreneurial training has a positive significant effect on the entrepreneurial attitude of manufacturing micro and small enterprise owners has been rejected. This finding contradicts with the finding of researches by Ndou et al., (2018); Cui et al., (2019), Varela and Jiménez (2001), Rahayu et al., (2014); Malebana (2012); Herta (2018); Ratten and Jones (2020). And hypothesis that the leadership of the owner has a positive significant effect on the entrepreneurial attitude of the owner of service and manufacturing micro and small enterprises has been accepted.

In this study, the mediating role of entrepreneurial attitude has been examined. Therefore, the two paths were investigated by using Amos. The first path was entrepreneurial training through entrepreneurial attitude of the owners, then the innovation of the micro and small enterprises. Entrepreneurial training negatively affected the innovation of service and manufacturing micro and small enterprises. The indirect effect of entrepreneurial training indirectly affects negatively by the coefficient of  $-0.046$ , as shown in Table 8. Hence, entrepreneurial attitude of the owners played a mediating role between entrepreneurial training and the innovation of service and manufacturing micro and small enterprises. The second path was leadership of the owners through entrepreneurial attitude of the owners, then the innovation of the micro and small enterprises. Leadership of the owners positively affected the innovation of service and manufacturing micro and small enterprises. The indirect effect of leadership of the owners indirectly affects positively by the coefficient of  $0.071$ , as shown in Table 8. Hence, entrepreneurial attitude of the owners played a mediating role between leadership of the owners and the innovation of service and manufacturing micro and small enterprises.

To generalize the study, institutional (government support) and individual factors have significantly affected the innovation of service and manufacturing micro and small enterprises.

**Conclusion**

The latest trend is innovation, which brings customers, suppliers, and other outsiders directly into the search for and development of new products. Innovation is the benchmark to transform micro and small enterprises to medium and large companies (Daft, 2020). This study investigated factors that determined the innovation of service and manufacturing enterprises in the study area by considering the mediating role of entrepreneurial attitude of owners. The study finding supported that the factors such as government support, access to infrastructure, leadership of the owners, entrepreneurial training and the entrepreneurial attitude affected the innovation of service and manufacturing micro and small enterprises. The entrepreneurial attitude of the owners was mediating the leadership of the owners, and the entrepreneurial training towards the innovation of micro and small enterprises. This variable affected the innovation service and manufacturing micro and small enterprises innovation directly and indirectly with a statistical significant level through the mediating of entrepreneurial attitude.

**Recommendations**

The researchers, based on the finding, have forwarded the following recommendations to concerned bodies for them to enhance the innovation of service and manufacturing micro and small enterprises.

**Table 8** Indirect effects of the study variables

|        | EntTr   | AcInf | GovSup | LeadOw | EtAt  |
|--------|---------|-------|--------|--------|-------|
| EtAt   | 0.000   | 0.000 | 0.000  | 0.000  | 0.000 |
| InnMSE | - 0.046 | 0.000 | 0.000  | 0.071  | 0.000 |

Source: Own Survey (2021)

The training provided by colleges, government offices are better to focus on the entrepreneurial mind set to change the attitude of the enterprises' owners. Infrastructures such as electricity, water and other services better be accessible to micro and small enterprises with least cost. Training on leadership for the enterprise owners is crucial to enhance innovation.

#### Abbreviations

EtAt: Entrepreneurial attitude; Aclnf: Access to infrastructures; GovSup: Government support; LeadOw: Leadership of the owner; EntTr: Entrepreneurial training; InnMSE: Innovation of micro and small enterprises.

#### Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13731-022-00214-7>.

**Additional file 1.** Supplementary data.

#### Acknowledgements

Not applicable.

#### Authors' contributions

The research proposal, literature review, methodology, and the analysis part written by the principal author and the data collection, collation and encoding process done by the co-author. All authors read and approved the final manuscript.

#### Funding

The authors did not receive any fund from any organization.

#### Availability of data and materials

All data are included in the manuscript and available on hand too.

#### Declarations

##### Ethics approval and consent to participate

The respondents have agreed before filling the questionnaires and the concerned department wrote a letter to collect data.

##### Consent for publication

The researchers agreed to publish in the journal.

##### Competing interests

The authors declare that there are no competing interests.

Received: 5 July 2021 Accepted: 3 February 2022

Published online: 25 February 2022

#### References

- Abdu, M., & Jibir, A. (2017). Determinants of firms' innovation in Nigeria. *Kasetsart Journal of Social Sciences*. <https://doi.org/10.1016/j.kjss.2017.07.006>
- Abera, A. (2012). Factors affecting the performance of micro and small enterprises in Arada and Lideta sub-cities, Addis Ababa. MBA Thesis unpublished, School of Graduate Studies, Addis Ababa University, Ethiopia.
- Aduda, K., & Kaane, H. (1999). Technology policies and strategies. In A. Mulei & C. Bokea (Eds.), *Micro and small enterprises in Kenya: agenda for improving the policy environment* (pp. 129–141). International Centre for Economic Growth (ICEG).
- Agwu, M. O., & Emeti, C. I. (2014). Issues, challenges and prospects of small and medium scale enterprises (SMEs) in Port-Harcourt city. *European Journal of Sustainable Development*, 3(1), 101–101.
- Alawamleh, M., Ismail, L. B., Aqeel, D., & Alawamleh, K. J. (2019). The bilateral relationship between human capital investment and innovation in Jordan. *Journal of Innovation and Entrepreneurship*, 8(1), 1–17.
- Ayranci, A. E., & Ayranci, E. (2015). Connections between leadership features and attitudes towards innovativeness: A research on small and medium-sized business owners. *Procedia-Social and Behavioral Sciences*, 195, 1535–1542.
- Barney, J. B., & Wright, P. M. (1998). On becoming a strategic partner: The role of human resources in gaining competitive advantage. *Human Resource Management*, 37(1), 31–46. [https://doi.org/10.1002/\(SICI\)1099-050X\(199821\)37:13.0.CO;2-W](https://doi.org/10.1002/(SICI)1099-050X(199821)37:13.0.CO;2-W)
- Becker, G. S. (1964). *Human capital: A theoretical analysis with special reference to education*. Columbia University Press.
- Beach, P. (2017). Self-directed online learning: A theoretical model for understanding elementary teachers' online learning experiences. *Teaching and Teacher Education*, 61, 60–72.

- Beriso, B. S. (2021). Determinants of economic achievement for women entrepreneurs in Ethiopia. *Journal of Innovation and Entrepreneurship*, 10(1), 1–14.
- Cai, W., Lysova, E. I., Khapova, S. N., & Bossink, B. A. (2019). Does entrepreneurial leadership foster creativity among employees and teams? The mediating role of creative efficacy beliefs. *Journal of Business and Psychology*, 34(2), 203–217.
- Chesbrough, H., & Crowther, A. K. (2006). Beyond high tech: Early adopters of open innovation in other industries. *R&D Management*, 36(3), 229–236.
- Cui, J., Sun, J., & Bell, R. (2019). The impact of entrepreneurship education on the entrepreneurial mindset of college students in China: The mediating role of inspiration and the role of educational attributes. *The International Journal of Management Education*. <https://doi.org/10.1016/j.ijme.2019.04.001>
- Daft, R. L. (2020). *Organization theory and design*. Cengage learning.
- Daksa, M. D., Yismaw, M. A., Lemessa, S. D., & Hundie, S. K. (2018). Enterprise innovation in developing countries: An evidence from Ethiopia. *Journal of Innovation and Entrepreneurship*, 7(1), 1–19. <https://doi.org/10.1186/s13731-018-0085-4>
- David, C. E., Campbell, F. J., & Rehman, S. S. (2015). "Happy accidents": Innovation-driven opportunities and perspectives for development in the knowledge economy. *Journal of Innovation and Entrepreneurship*. <https://doi.org/10.1186/s13731-015-0021-9>
- de Oliveira Sousa, S. R., da Silva, W. V., da Veiga, C. P., & Zanini, R. R. (2020). Theoretical background of innovation in services in small and medium-sized enterprises: Literature mapping. *Journal of Innovation and Entrepreneurship*, 9(1), 1–26.
- Doblinger, C., Surana, K., & Anadon, L. D. (2019). Governments as partners: The role of alliances in US cleantech startup innovation. *Research Policy*, 48(6), 1458–1475.
- Egbetokun, A., Atta-Ankomah, R., Jegede, O., & Lorenz, E. (2016). Firm-level innovation in Africa: Overcoming limits and constraints. *Innovation and Development*. <https://doi.org/10.1080/2157930X.2016.1224619>
- Frishammar, J., & ÅkeHörte, S. (2005). Managing external information in manufacturing firms: The impact on innovation performance. *Journal of Product Innovation Management*, 22(3), 251–266.
- Fritsch, M., & Slavtchev, V. (2011). Determinants of the efficiency of regional innovation systems. *Regional Studies*, 45(7), 905–918.
- Gaal, H. O., & Afrah, N. A. (2017). Lack of infrastructure: The impact on economic development as a case of Benadir region and Hir-shabelle, Somalia. *Developing Country Studies*, 7(1).
- Garson, G. D. (2012). *Testing statistical assumptions*. Statistical Associates Publishing.
- Herta, A. (2018). Entrepreneurship education as the molding of entrepreneurial attitudes: a case study.
- Howells, J. (1999). Regional systems of innovation? In D. Archibugi, J. Howells, & J. Michie (Eds.), *Innovation policy in a global economy* (pp. 67–93). Cambridge University Press.
- Kaiser, H. F. (1970). A second generation little jiffy. *Psychometrika*, 35(4), 401–415.
- Kalay, F., & Gary, L. Y. N. N. (2015). The impact of strategic innovation management practices on firm innovation performance. *Research Journal of Business and Management*, 2(3), 412–429.
- Karia, N., & Asaari, M. H. A. H. (2019). Leadership attributes and their impact on work-related attitudes. *International Journal of Productivity and Performance Management*. <https://doi.org/10.1108/IJPPM-02-2018-0058>
- Koroleva, P., & Moiseev, D. (2012). Power of innovative culture.
- Liao, J., Kickul, J. R., & Ma, H. (2009). Organizational dynamic capability and innovation: An empirical examination of internet firms. *Journal of Small Business Management*, 47(3), 263–286.
- Ma, G., Andrews-Speed, P., & Zhang, J. D. (2011). Study on Chinese consumer attitudes on energy-saving household appliances and government policies: Based on a questionnaire survey of residents in Chongqing, China. *Energy Procedia*, 5, 445–451.
- Ma, L., Lan, Z., & Tan, R. (2020). Influencing factors of innovation and entrepreneurship education based on the theory of planned behavior. *International Journal of Emerging Technologies in Learning (IJET)*, 15(13), 190–206.
- Malebana, J. M. (2012). *Entrepreneurial intent of final year commerce students in the rural provinces of South Africa*. University of South Africa.
- Meissner, D., & Kotsemir, M. (2016). Conceptualizing the innovation process towards the 'active innovation paradigm'—trends and outlook. *Journal of Innovation and Entrepreneurship*, 5(1), 1–18.
- Ndou, V., Secundo, G., Schiuma, G., & Passiante, G. (2018). Insights for shaping entrepreneurship education: Evidence from the European entrepreneurship centers. *Sustainability*, 10(11), 4323.
- Ngibe, M., & Lekhanya, L. M. (2020). Environmental factors affecting innovative leadership towards sustainable growth of manufacturing small and medium enterprises. *Academy of Entrepreneurship Journal*, 26(4), 1–18.
- Nguyen, T.T. (2007). Impact of public support on firms' innovation performance evidence from Luxemburg's firms. Proceedings Second Conference on Micro Evidence on Innovation and Development, Renmin University, April 21–23, Beijing.
- Nicita, A., Ramello, G., & Scherer, F. (2005). Intellectual property rights and the organization of industries. *New Perspectives in Law and Economics*, 12(3), 289–296.
- Nikolaidis, Y., Fouskas, K., & Carayannis, E. G. (2013). Assisting regional policy by rapidly comparing enterprise innovation between regions. *Journal of Innovation and Entrepreneurship*, 2, 16. <https://doi.org/10.1186/2192-5372-2-16>
- Perkins, D., & Robbins, G. (2011). The contribution to local enterprise development of infrastructure for commodity extraction projects: Tanzania's central corridor and Mozambique's Zambezi Valley. *Making the Most of Commodities (MMCP) Discussion Paper*, 9.
- Pickard-Whitehead, G. (2018). What is competitive advantage? Retrieved November 28, 2021 from <https://smallbiztrends.com/2018/04/what-iscompetitive-advantage.html>
- Pounder, P., & Devonish, D. (2016). Understanding entrepreneurial attitudes, intentions and activity in barbados. *Caribbean Educational Research Journal*, 4(1), 79–96.
- Price David, P., Stoica, M., & Boncella, R. J. (2013). The relationship between innovation, knowledge, and performance in family and non-family firms: An analysis of SMEs. *Journal of Innovation and Entrepreneurship*, 2, 14.

- Raghupathi, V., & Raghupathi, W. (2017). Innovation at country-level: Association between economic development and patents. *Journal of Innovation and Entrepreneurship*, 6(1), 1–20.
- Rahayu, M., Novadjaya, L. H., & dan Indrawati, N. K. (2014). Intention of Entrepreneurship to New Students. *Jurnal Aplikasi Manajemen*, 9(2), 329–339.
- Ratten, V., & Jones, P. (2020). Entrepreneurship and management education: Exploring trends and gaps. *The International Journal of Management Education*, 19(1), 100431. <https://doi.org/10.1016/j.ijme.2020.100431>
- Rosli, M. M., & Mahmood, R. (2013). Moderating effects of human resource management practices and entrepreneur training on innovation and small-medium firm performance. *Journal of Management and Strategy*, 4(2), 60.
- Rumelt, R. P. (1984). Toward a strategic theory of the firm. In R. Lamb (Ed.), *Competitive strategic management* (pp. 556–570). Prentice Hall.
- Rush, M. C., Thomas, J. C., & Lord, R. G. (1977). Implicit leadership theory: A potential threat to the internal validity of leader behavior questionnaires. *Organizational Behavior and Human Performance*, 20(1), 93–110.
- Santamaría, L., Barge, A., & Modrego, A. (2010). Public selection and financing of R&D cooperative projects: Credit versus subsidy funding. *Research Policy*, 39(4), 549–563.
- Schumpeter, J. (1947). The creative response to economic history. *Journal of Economic History*, 7, 149–159.
- Shukla, T., & Singh, A. (2015). Organizational factors influencing innovation: An empirical investigation. *Journal of Strategic Human Resource Management*. <https://doi.org/10.21863/jshrm/2015.4.3.018>
- Smith, M., Busi, M., Ball, P., & Van der Meer, R. (2008). Factors influencing an organisation's ability to manage innovation: A structured literature review and conceptual model. *International Journal of Innovation Management*, 12(04), 655–676.
- Sze-yeng, F., & Hussain, R. M. R. (2012). Graduate entrepreneur training by design (GET by Design): An innovative and self-directed approach to instructional design and development. *Procedia-Social and Behavioral Sciences*, 46, 3541–3545.
- Thongsri, N., & Chang, A. K. H. (2019). Interactions among factors influencing product innovation and innovation behaviour: Market orientation, managerial ties, and government support. *Sustainability*, 11(10), 2793.
- Varela, R., & Jiménez, J.E. (2001). The effect of entrepreneurship education in the universities of Cali, Frontiers of Entrepreneurship Research, Babson Conference Proceedings, (Jönköping University, Jönköping International Business School and Swedish Foundation for Small Business Research). Retrieved from [www.babson.edu/entrep/fer](http://www.babson.edu/entrep/fer)
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.
- Zelga, K. (2017). The importance of competition and enterprise competitiveness. *World Scientific News*, 72, 189–194.
- Zheng, C., Morrison, M., & O'Neill, G. (2006). An empirical study of high performance HRM practices in Chinese SMEs. *International Journal of Human Resource Management*, 17, 1772–1803. <https://doi.org/10.1080/09585190600965282>

## Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submit your manuscript to a SpringerOpen<sup>®</sup> journal and benefit from:

- Convenient online submission
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

---

Submit your next manuscript at ► [springeropen.com](https://www.springeropen.com)

---