Determinants of Cottage and Small Industries Growth in Thimphu Thromde*

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Abstract

The main purpose of this study was to investigate the determinants of the growth of Cottage and Small Industry (CSI) under Thimphu Thromde. We adopted a cross-sectional study design where samples were drawn using proportionate stratified random sampling technique. The analysis is based on the 102 CSI owners who responded to the online survey. Descriptive analysis shows that CSI sector in Thimphu Thromde is growing both in terms of employment generation and capital accumulation. Furthermore, multiple linear regression (MLR) test indicates that management know-how, technology, support CSIs get, and marital status are statistically significant with capital growth while access to finance, government rules and regulations and firm age were statistically significant with employment growth.

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1. Introduction

Cottage and Small Industry (CSI) constitute about 95% of the total industry in Bhutan (Ministry of Economic Affairs [MoEA], 2020). Among this, 6,811 firms are registered within the administrative jurisdiction of Thimphu Thromde (National Statistics Bureau [NSB], 2021). The sector is reported to be playing a vital role in Bhutan's socio-economic development like the role played by so called Micro and Small Enterprises (MSEs) in other developing countries. Specifically, Gichuki et al. (2014, p.1) states "MSEs as lifeblood of most economies" while Tarfasa et al. (2016, p.4) regard it as the "springboard for broad-based growth".

In the similar vein, the Royal Government of Bhutan (RGoB) places high priority to the development of CSIs particularly given its potential to enhance income, generate employment and reduce poverty. Data suggest that the officially registered CSIs in Bhutan grew by 44% during the last decade. Among the total registered, the highest (77.3%) are registered under service sector followed by 11.8% in production and manufacturing and 8.2% with contract. As of June 2021, a total of 21,221 firms are reported to be operational in the country (NSB, 2021).

However, considerable increase in the number of CSI firms has neither brought corresponding impact on economic productivity nor generated employment as envisioned. According to Asian Development Bank (2019), the sector contributes only about four percent to the GDP and provides barely 11% of the total employment. This is significantly low when compared to the other developing countries. Although the contribution of MSE sector to overall economy varies by country, recent studies show astounding numbers. In low-income countries, the sector's contribution exceeds 60% of GDP and 70% of the total employment, whereas in middle-income countries, it encompasses more than 95% of the total

employment and approximately 70% of GDP (Abdissa & Fitwi, 2016).

Therefore, the limited growth and performance of CSI sector in Bhutan echoes the necessity for speedy interventions in areas of research and investment. Gebreyesus (2007) reported that MSEs' growth can be severely constrained by multiple factors while Mazumdar & Mazaheri (2003) and Tybout (2000) explicitly termed it as an issue of "missing middle". Thus, bringing measures to accelerate the growth of CSI has become a critical policy interest particularly in developing countries. Against this backdrop, the main goal of this study was to investigate the determinants of the CSI growth in the context of Bhutan, specifically in relation to Thimphu Thromde.

1.1 Research Questions

To achieve the above research objective, some broad research questions will be formulated to guide the course of the study. The questions are reflected below:

a. What are the socio-demographic and economic characteristics of CSI owners in Thimphu Thromde?
b. What factors significantly contribute to the growth of CSIs in relation to employment and capital generation in Thimphu Thromde?

1.2 Objectives

a. To assess the performance of CSI firms under Thimphu Thromde in relation to capital formation and employment generation.
b. To identify possible determinants of the CSI growth under Thimphu Thromde using employment and capital growth as the dependent variables.

2. Literature Review

2.1.1 Key concepts and definitions

Seyoum, Aragie, & Tadesse (2016, p.581) states, 'there is no universally agreed definition for Micro and Small Enterprises (MSE)'—termed as Cottage and Small Industry (CSI) in Bhutan. Depending on the country context, some of the commonly used parameters include number of employees, asset value, investment size and sales turnover (Seyoum et al., 2016). Likewise, many earlier studies have used total assets, sales, employment size, profit, capital, and others to measure its growth (Berkhamet et al., 1996; Davidsson & Wiklund, 2000; Holmes & Zimmer, 1994). For the purpose of this study, employment and capital were used as proxy (dependent) variables to measure the growth of CSI. Meanwhile, metrics being used for defining CSI in Bhutan is presented in Table 1.

2.1.2 Capital growth

It is determined as the average of current and initial capital. When expressed in annual terms, average return can be referred to as average annual growth rate (AAGR) (Yadergal et al., 2019).

$$\frac{\text{Current capital} - \text{initial capital}}{\text{Initial capital}}$$

2.1.3 Employment growth

Refers to employees employed both permanently and temporarily and it also includes the family members and the owner working in the enterprise (Yadergal et al., 2019). However, calculation of Average Employment Growth Rate (AEGR) will include only permanent employees for this research purpose.

$$\frac{\text{Current employment} - \text{initial employment}}{\text{Initial employment}}$$

Table 1. *Bhutan's enterprise definitions*

Firm size	Employment size	Investment size
Cottage	1-4	< Nu. 1 million
Small	5-19	Nu. 1-10 million
Medium	20-99	Nu. 10-100 million
Large	100 (plus)	> Nu. 100 million

Source: Department of Cottage and Small Industries, MoEA, 2019

2.2 Theoretical development

2.2.1 Gibrat's Law of Proportionate Effect

The theoretical paradigm of firm growth generally emerges from Gibrat's (1931) Law of Proportionate Effect (LPE). The theory suggests that firm growth has no relationship with size of firm. Also acknowledged as 'stochastic model', this ideal simply postulates firms as a function of random distribution, with fortunate firms exhibiting higher growth rates over the period of time (McPherson, 1996). Contrarily, the main drawback of this theory is it does not recognize the effects of policy interventions on the growth of firm and thus receives tremendous criticisms later.

2.2.2 Coase model

According to Coase (1937), firms' existence is determined by better management of the factors of production, which leads to lower transaction costs. The theory essentially underscores the economic significance boosted by the concept of management structure. It emphasizes that when management costs including supply prices of the factors of production are well managed, firms possibly tend to grow quicker. Coase's view was later complimented by Penrose (1959) when he asserted internal resources as the driving force of firms' growth. The ability of the firms to plan and operate resources efficiently will take firms to new heights.

2.2.3 Life Cycle Theory

When Mueller (1972) introduced life cycle theory, conceptual understanding of firm growth gained much clarity. Unlike the previous theorists, Muller's theory postulates that firm growth is determined by age and investment opportunities. This means firm growth follows S-shaped growth pattern, with slow growth at first, then rapid expansion, and finally diminishing its return as the firm matures and reaches optimum growth potential (Mueller, 1972). Although, no connections were drawn, this theory literally echoes the law of increasing and diminishing return; a popular concept of production function being studied in economics.

2.2.4 Theory of noisy selection

With completely diverging viewpoint to Gibrat's LPE model, Jovanovic (1982) came up with a new theory known as 'noisy' selection. The theory argues that efficient firms grow and survive while inefficient firms retard and shut down. Efficiency according to this theory is realized as a result of learning from the past and accordingly addressing the problems through better management. In other words, Jovanovic's theory simply predicts that management efficiency improves over time through learning, and as firms grow in size and age, growth rate slows down due to diminishing opportunities arising from learning shocks (McPherson, 1996).

2.2.5 Traditional Neo-Classical Theory

The conventional neoclassical economics (O'Farrell & Hitchens, 1988, p.107) proposes that 'declining short-run cost curves and hence savings accruing from lower unit costs incentivize firm growth'. This perspective in a sense emphasizes the importance of capital (fixed factor of production) in firm's growth. Without capital, firm productivity specifically in relation to labour can be compromised. Thus, firm growth is largely reliant on capital expansion (Aguilar & Kimuyu, 2002) in addition to demand growth (Aguilar & Kimuyu 2002; McPherson, 1996).

2.3 Empirical evidences

2.3.1 Access to finance

Access to finance is one of the most critical components in business growth. This is based on availability of extensive literature in corporate financing ascertaining the positive relationship between finance and firm growth both at macro and micro level (Demirgüç-Kunt & Maksimovic, 1998; Beck & Demirgüç-Kunt, 2006; Wang, 2016). In contrary to most authors, Emmanuel et al. (2019) reports difficulty in obtaining finance is not a significant determinant of firm performance. However, due to overwhelming evidences reported by most authors, the narrative of the lack of access to finance causing major bottleneck to the growth of MSMEs, particularly in developing countries cannot be ignored. Improving the financial intermediation is hence vital to enhance return on asset, investment in gainful ventures and firm growth (Bond et al., 2015; Bah & Cooper, 2015). Most MSEs are branded as risky ventures due to excessive administrative costs, lack of experience in dealing with financial institutions, and poor credit repayment track record with banks (Abdissa & Fitwi, 2016). Since most banking institutions are reluctant to provide small enterprises with loan and credits, most MSEs are unable to secure collateral requirements. Furthermore, evidence of improved access to finance resulting to increased employment has also been established (Ayyagari et al., 2016).

2.3.2 Management know-how

The growth of business firms (large or small) is likely to be influenced by the level of human capital embodied in its owner. The embodiment of human capital would be mirrored in the ability of business owner/proprietor to exhibit both hard and soft skills of people management, resource and finance management, planning, staffing, organizing, directing and controlling in order to achieve business goals (Yadergal et al., 2019). While management capability may be shaped through diverse approaches, education level of the proprietor shows significant correlation to firm sustainability and growth (Bates 1990). This finding also resonates that of Douglass (1976) and

numerous other authors who later draw similar conclusions (McPherson, 1996; Gitonga, 2008; Aynadis & Mohammednur, 2014). Fundamentally, the importance of management can be underscored from strategic capability view, which states, 'resources are productive assets the firm owns; capabilities are what the firm can do' (Kohtamäki et al., 2013 as cited in Ulaga & Reinartz, 2011, p.3).

2.3.3 Accounting and record keeping

The role and importance of record keeping largely stems through the prism of planning and decision making. According to Anzola (2002), planning is critical towards achieving organizational efficiency in terms of resource allocation, cost reduction and profit maximization. Several micro and small businesses fail in their first few years of operation (Orobia et al., 2020; Soininen et al., 2012) due to a lack of ability to follow market dynamics, follow up actions, and decision-making flexibility. Urquidy and Barceló (2018) discusses two broad components involing economic and financial management as far as record keeping is concerned. While economic management includes methods of bookkeeping, sales and revenue registration, pricing mechanisms, etc, financial management includes funding sources and invesment. However, studies show that the practice of accounting and record keeping by MSMEs are generally poor. For example, Mariño and Medina (2009) finds 47.8% of the MSMEs do not use financial instuments for decision making while 45% keep business accounting records and only 2% use accounting software.

2.3.4 Innovation and technology

According to Aljuboori et al. (2022, p.5), 'the capacity of a firm to generate new ideas and implementing them into new goods or services that improve the firm's performance is referred to as innovation capability'. Several recent studies reveal, firms with better intellectual capital exhibit higher ability to innovate and increase the performances (Khalique et al., 2018; Wang et al., 2021). Moreover, a previous study by Demirgüç-Kunt and Maksimovic (1998) who investigated over 19,000 firms across

47 developing economies also finds innovative firms achieving considerably greater quantities of output and growth. In contrast, gloom reality is that many MSMEs in developing countries endure deprivation of technological capabilities. Despite the claim of positive innovation-sales growth relationship as evidenced by Demirgüç-Kunt and Maksimovic (1998), the picture is ambiguous with innovation-employment relationship. While product innovations may bring positive impact on employment (Harrison et al., 2005; Calvo, 2006; Benavente & Lauterbach, 2008); process innovations may rather lead to labour-saving practice and thus create negative or no implication on employment generation (Harrison et al., 2005; Benavente & Lauterbach, 2008).

2.3.5 Access to market

Marketing has become an indispensable force in modern business management. Wilkie and Moore (2007) argue marketing activity as management task that includes planning the conception of products, their price, promotions and distribution to meet customer demand. However, Porto, Costa, and Watanabe (2017) point out numerous obstacles encountered by small businesses due to management incompetency. For instance, the owners or managers of small enterprises are generally not trained in marketing and hardly use professional marketing techniques (Hankinson ,1991). This results to the loss of opportunity for the managers or owners to operate in the market in terms of obtaining scale and an impact on financial indicators (Porto et al., 2017). Unlike such practices, MSEs' that are able to exercise marketing techniques tend to increase their profitability and hence business growth (Ishengoma & Kappel, 2011).

2.3.6 Infrastructure

One of the basic factors needed to accelerate the pace of economic growth in any country is public infrastructure. The ability of the businesses to thrive and generate profit is essentially reliant on access to business and industrial premises (shops, offices, factories, market stands) and infrastructure facilities, including supply of electricity, water,

telecommunication connections, sewage systems, etc (Yadergal et al., 2019). For example, unreliable electricity supply lowers investment in productive capacity of firms (Svensson & Reinikka, 2002) while poor road connectivity (Tybout, 2000), telecommunication (Goedhuys & Sleuwaegen, 2010) water supply (Shibia & Barako, 2017) and sewage system (Aterido et al., 2011) affects business growth significantly. Because of the better infrastructure, MSEs in urban areas tend to grow faster by twofold in comparison to rural setting (McPherson, 1996).

3. Research methodology

3.1 Study area

The scope of the study was geographically limited to Thimphu Thromde. The location was selected primarily to suit the convenience of the project team who otherwise could not afford travelling to a study area out of Thimphu due to limited time and resources at the disposal. Moreover, being the capital city of Bhutan, Thimphu accommodates a diverse cluster of businesses where several people migrate to the capital city from various Dzongkhags looking for better business and employment opportunities. It is also the most populated urban city in the country.

3.2 Data Collection approach

This study adopted a cross-sectional design to collect primary data from the target population. Correctly completed surveys can give standardized data for quantification and statistical analysis, according to Rea and Parker (2005). So, a structured questionnaire was designed in kobotoolbox and deployed online to the respondents. Interview questions were rationally ordered so that respondents did not have trouble responding. Before the main survey, questionnaires were pilot-tested for validity and reliability.

3.3 Sampling design and technique

The population (list of CSI owners) was obtained from Department of Cottage and Small Industry, Ministry of

Economic Affairs. According to this record, there are about 6,652 CSIs registered under Thimphu Thromde. These enterprises are grouped into three sectors -Production and manufacturing (338), Services (5829) and contract (485) which have been used as strata for sample selection. Accordingly, a total of 99 samples were selected using stratified proportional random sampling technique. Sample size was determined using Yamane's formula (Yamane,1967) as stated below.

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

$$n = \frac{6{,}652}{1 + 6{,}652(0.1 * 0.1)} = 99$$

where; n=sample size, N= target population and e=margin of error (0.1)

3.4 Data analysis method

The first stage of data analysis involves interpretation of socio-demographic characteristics and CSI performance at the descriptive level. In order to estimate the relationship between dependent and independent variables, Pairwise Pearson Correlation Test was used.

A multiple regression analysis (MLR) was conducted to examine the concurrent effect of the predictor variables on the response variable. According to Cohen, West & Aiken (2013) and Wooldridge (2009), MLR is a widely used statistical tool for examining relationships amongst different variables particularly that are interval scaled. In other sense, MLR simply aids in understanding the degree of variance explained by sets of predictors to a response variable.

Before conducting the test, common assumptions of MLR (linearity, independence, multicollinearity, homoscedasticity and multivariate normality) were assessed. The data indicated some degree of non-linearity and heteroscedasticity. Therefore, variable transformations (using log method) were done wherever required and robustness test was executed to ensure homoscedasticity is not violated. Validity and reliability of

research instruments were also tested using the values of Cronbach's alpha. The summary of the skewness and kurtosis is presented in Table 1. Statistically, an absolute value greater than 1.96 is significant at p<.05, while values above 2.58 is significant at p<.01 and 3.29 are significant at p<.001. Large samples are expected to return small standard errors and vise-versa with small samples. So, when sample sizes are big, significant values arise from even minor deviations from normality and in small samples it's normal to look for values above 1.96 (within +2 to -2 range). Therefore, the joint p-values<.05 (Table 2) throughout all variables except infrastructure (p>0.05) and government rules and regulations (p>0.05) indicates fairly a symmetric distribution.

Table 2. *Summary of skewness and kurtosis statistics for CSI growth variables*

Variables	Obs.	Skewness	Kurtosis	Joint	
				adj. chi2	*Prob.>chi2*
Access to finance	102	0.0326	0.7882	4.68	0.0961
Management competency	102	0.3514	0.0025	8.79	0.0123
Access to market	102	0.7517	0.0146	5.81	0.0548
Infrastructure	102	0.6695	0.0665	3.65	0.1616
Technology and innovation	102	0.5912	0.0001	13.62	0.0011
Support CSIs get	102	0.4165	0.0059	7.48	0.0238
Accounting and record keeping	102	0.5631	0.0009	9.81	0.0074
Government rules and regulations	102	0.4269	0.5649	0.98	0.6121

3.5 Description of variables and hypotheses

In order to understand the performance of CSI in Thimphu Thromde, we used capital growth and employment growth as the dependent variables.

3.5.1 Capital growth

According to the Yadergal et al (2019), capital growth is computed as mean of current and initial capital. When expressed in annual terms, average return can be expressed as average annual growth rate (AAGR).

$$\frac{\text{Current capital} - \text{initial capital}}{\text{Initial capital}}$$

3.5.2 Employment growth

Likewise, employment growth is computed as the mean of current and initial employment. While many researchers include both permanent and temporary employees, this analysis excludes temporary employees as respondents were asked to mention only permanent employees including the owners during the survey.

$$\frac{\text{Current employment} - \text{initial employment}}{\text{Initial employment}}$$

The growth of a business can be influenced by numerous factors. The independent variables and hypotheses proposed below is intended to enhance our empirical understanding of the determinants for growth of CSIs in Thimphu Thromde. These variables were chosen on the basis of literature review and its relevance to the context of our local business environment. Each variable is briefly described below.

3.6.1 Access to finance

In Bhutan, lack of finance is regarded as one of major impediments for starting, expanding and transforming businesses, particularly with micro and small businesses. The Royal Government of Bhutan (RGoB) take cognizance of this challenge and accordingly designated CSIs as one of the priority flagship programmes during the 12th FYP. Currently, there are five banks, three insurance companies (two direct insurers and one reinsurer), three microfinance institutions, and other financial service providers such as the Credit Information Bureau (CIB), National Pension and Provident Fund (NPPF), Central Registry (CR), Royal Securities Exchange of Bhutan, Ltd (RSEB), Nubri Capital Pvt Ltd and the CSI Bank that provide credit schemes in the country. Report suggest that debt (through informal lending) is by far the predominant

source of external financing, despite the barriers associated with debt financing in Bhutan.

Hypothesis 1: There is a significant relationship between access to finance and growth of CSI.

3.6.2 Management competency

According to Case (2009), business administration necessitates significant changes in management, employee attitudes, and values. As a result, managers must be the driving force behind CSI implementation. Managers are responsible for keeping the CSI portfolios up to date on a regular basis (Abuhejleh & Yehia, 2014). Managers are expected to seek out new opportunities and encourage employee engagement in CSI portfolios as the organization's key agents. Although top management sets the CSI's direction and strategy, the initiative's key implementers are middle management and employees. They must work together to make the CSI portfolio a reality (Maon, Lindgreen, & Swaen, 2009).

Hypothesis 2: There is a significant relationship between management competency and CSI growth

3.6.3 Access to market

Conventional economic theories advocate that growth necessitates strategic elasticity and ability to change market focus, thus demanding the introduction of new products or entering the new market. Small businesses generally believe market constraints and helplessness to sell their products and services as one of the most serious hindrances to the starting of businesses and growth. This narrative also holds true in case of Bhutanese CSIs, as suggested from numerous studies undertaken regarding the MSEs sector. The government of Bhutan places high emphasis on improving market access through various initiatives.

Hypothesis 3: There is a significant relationship between market accessibility and CSI growth

3.6.4 Infrastructure

RGoB has invested in infrastructure development to promote innovation and nurture startups as well as CSIs with high growth potential in order to foster socioeconomic development and instill an entrepreneurial culture. For infrastructure development, the RGoB has launched a number of projects in different dzongkhags, including the re-modeling of the service centre, renovation of units, and the establishment of a crèche in Thimphu, the establishment of CSI estate in Tsirang, and the establishment of a startup center in Samtse dzongkhag (MoEA, 2021).

Hypothesis 4: There is a significant relationship between infrastructure and CSI growth

3.6.5 Technology and innovation

The success of CSIs in today's fast-changing global business climate depends heavily on innovation, creativity, and the use of new technologies. To disseminate information on accessible technologies to startups and CSIs in general, RGoB has created an online CSI Technology Request Database. Such knowledge is essential for startups since they lack access to product-enhancing technologies that are relevant to their businesses, resulting in low growth and productivity. The online CSI Technology Request Database is expected to assist startups and CSIs in adopting the relevant and appropriate technology (MoEA, 2021).

Hypothesis 5: There is significant relationship between technology and innovation and CSI growth

3.6.6 Support CSIs get

Recognizing the importance of CSIs in achieving development goals, the RGoB has considered appropriate support policies and programs for CSI growth a top priority. RGoB has provided assistance in the areas of human capital development, digital marketing and business management training, infrastructure development (service and startup centers, and the establishment of CSI estate), donor fund mobilization and

facilitation, CSI market and CSI product promotion, and so on. The RGoB has also introduced initiatives such as the Bhutan Enterprise Award, Innovation Voucher Scheme, and Industrial Development Grant Scheme to encourage businesses (MoEA, 2021).

Hypothesis 6: There is significant relationship between support CSIs get and their growth

3.6.7 Accounting and record keeping

According to Ademola et al. (2012), accounting and record-keeping are crucial to CSI management. The identification, categorization, storage and protection, reception and transfer, retention, and disposal of documents are all part of the financial statement compilation process. He also noted that records management requires rules, methods, processes, operations, and workers. The knowledge management required for effective business performance is mainly reliant on record keeping. According to Laughlin and Gray (1999), the most essential reasons to build up a strong record management system are to regulate the development and expansion of records, minimize operational costs, enhance efficiency and productivity, and maintain regulatory compliance.

Hypothesis 7: There is a significant relationship between accounting and record keeping and CSI growth

3.6.8 Government rules and regulations

The government has taken steps to encourage and grow CSIs, including bringing on board the Bhutan Agriculture and Food Regulatory Authority (BAFRA) and the Bhutan Standard Bureau (BSB), both of which are responsible for product standardization and certification (MoEA, 2021). Sales tax and customs duty exemption are among the tax breaks available for importing machinery, raw materials, and other CSI necessities.

Hypothesis 8: There is a strong relationship between government rules and regulation and CSI growth.

3.7 Econometric model

The study used the following multiple linear regression model.

$$G_i = \beta_o + \sum \beta_i + X_i + \varepsilon_i$$

Where:
G_i is the i^{th} observations of response variables
B_o is the constant or intercept term
B_i are the coefficients of X_i variables
X_i is the i^{th} observation of explanatory variables
E_i is the error term

Gi is CSI growth (Employment growth and Capital growth), and when the above general model changed into specified variables, the multiple regression equations were expressed as follows:

$$CAP_g = \beta_0 + \beta_1 (AFIN) + \beta_2 (MGTC) + \beta_3 (MRKA) + \beta_4 (INFRA) + \beta_5 (TECH) + \beta_6 (SUPT) + \beta_7 (ARK) + \beta_8 (GOVT) + \beta_9 (Sex) + \beta_{10} (Age) + \beta_{11} (Edu) + \beta_{12} (Mari) + \beta_{13} (Fage) + \beta_{14} (Exp) + \beta_{15} (Cate) + \beta_{16} (Sour) + \beta_{17} (Loca) + \beta_{18} (Sect) + \varepsilon \quad \textbf{Equation 1}$$

$$EMP_g = \beta_0 + \beta_1 (FIN) + \beta_2 (MGTC) + \beta_3 (MRKA) + \beta_4 (INFRA) + \beta_5 (TECH) + \beta_6 (SUPT) + \beta_7 (ARK) + \beta_8 (GOVT) + \beta_9 (Sex) + \beta_{10} (Age) + \beta_{11} (Edu) + \beta_{12} (Mari) + \beta_{13} (Fage) + \beta_{14} (Exp) + \beta_{15} (Cate) + \beta_{16} (Sour) + \beta_{17} (Loca) + \beta_{18} (Sect) + \varepsilon \quad \textbf{Equation 2}$$

Where:

CAP_g denotes capital growth, EMP_g is employment growth, AFIN is access to finance; MGTC is management competency; MRKT is Market Access; INFRA is access to infrastructure; TECH is technology & innovation; SUTP is Support MSEs get; ARK is accounting and record keeping; GOVT is Government rules and regulations; Edu is owner's education level; Mari is marital status; Fage is firm age; Exp is experience; Cate is firm category; Sour is source of finance; Loca is location; Sec represents sector, ε is the error term of the model.

4. Results and discussion

4.1 Descriptive results

4.1.1 Demographic characteristics

Table 3 presents the socio-demographic characteristics of CSI owners/managers in Thimphu Thromde. According to the survey, about 61% of businesses are owned and managed by males while 39% are owned by females. This means operating cottage and small businesses are more common among the males than females in Thimphu. The mean age of the respondents was 36 years (SD=7.9) and majority (48.4%) of the them belonged to the age range of 31-40 years. As far as the education level is concerned, majority (52%) reported of having tertiary education while on the other hand only one percent reported with 'no formal education' and 'primary education' respectively.

Table 3. Socio demographic characteristics of the respondents

Characteristics		**Frequency**	**Percent**
Sex	Male	62	60.8
	Female	40	39.2
Age group	18-30	25	24.5
	31-40	49	48.4
	41-50	24	23.5
	51-60	3	2.9
	60 plus	1	1.0
Education level	No Formal Education	1	1.0
	Non Formal Education	2	2.1
	Primary School	1	1.0
	Lower Secondary School	2	2.0
	Middle Secondary School	10	9.8
	Higher Secondary School	30	29.4

	Technical Vocational Education & Training	3	2.9
	Tertiary Education	53	52.0
Marital status	Never married	22	21.6
	Living together	5	4.9
	Married	70	68.6
	Divorced	2	2.0
	Separated	2	2.0
	Widow/widower	1	1.0

4.1.2 Business characteristics

4.1.2.1 Ownership and source of start-up capital

As presented in Table 4, majority of businesses are characterized by proprietorship (88.2%) followed by partnership (10.8%) and the least with cooperative (1%). When asked about the source of start-up capital, majority (46%) have started their businesses through own saving followed by support from family/friends (25.5%) and loan from the bank with 20.6% (Table 5). This partly suggests that CSIs have less access to finance in terms of obtaining credit from banks and micro finance institutions. As presented in the Table 6, over 49% of CSIs are operating in the core city area while 43.1% are located in the city outskirts.

Table 4. *Frequency and percentage distribution of respondents by type of ownership*

Ownership type	**Freq.**	**Percent**
Cooperative	90	1.0
Partnership	11	10.8
Sole proprietorship	1	88.2
Total	102	100

Table 5. *Frequency and percentage distribution of respondents by source of start-up capital*

Source of capital	**Freq.**	**Percent**
Own saving	47	46.1
Loan from bank	21	20.6
Support from family/friends	26	25.5
Selling personal assets	1	1.0
Support from government	1	1.0
Others	6	5.9
Total	102	100

Table 6. *Frequency and percentage distribution of respondents by location of business*

Location	**Freq.**	**Percent**
Core city area	50	49.0
City outskirt	44	43.1
Other	8	7.8
Total	102	100

4.1.2.2 Business performance scenario

Table 7 compares the average capital and employment between current and initial start-up by the category of businesses. The analysis shows that both categories of CSIs have grown in terms of capital. The mean start-up capital among the cottage industry is Nu. 721,579 (0.721 million) as compared to Nu. 1,756,172 (1.756 million) for small industry. Similarly, the mean reported current capital for cottage industry is Nu. 1,569,737 (1.569 million) while Nu. 3,347,188 (3.347 million) was reported among small industry. This implies that cottage industry in Thimphu Thromde on average grew by 143.4% in comparison to small industry which grew by 90.6% since the establishment of the businesses. On the other hand, average employment in cottage industry grew from 3 to 4 from start-up

to current while the average number of employees in small industry increased from 5 to 9 respectively.

Table 7. *Mean capital and employment growth by category of business*

Category	Capital (Nu.)		Employment (Number)	
	Start-up	Current	Start-up	Current
Cottage	721,579	1,569,737	3.0	4.0
Small	1,756,172	3,347,188	5.0	9.0
Overall	1,370,735	2,685,000	5.0	7.0

Table 8 presents the capital and employment growth scenario by sector. An increase of mean capital is observed among all sectors. The highest increase in mean capital is observed in contract sector (164.2%) followed by production and manufacturing (124.6%) and the least with service (85.8%). However, increase in capital has not necessarily generated employment except service sector which added on average 4 employees despite lowest growth rate in terms of capital.

Table 8. *Mean capital and employment growth by sector of the business*

Sector	Capital (Nu.)		Employment (Number)	
	Start-up	Current	Start-up	Current
Production & manufacturing	1,048,125	2,354,375	6.0	6.0
Services	1,511,133	2,807,333	4.0	8.0
Contract	882,727	2,331,818	4.0	4.0
Overall	1,370,735	2,685,00	5.0	7.0

4.2 Correlation tests: average capital growth rate as proxy for CSI growth

Management competency, access to market, support CSIs get, accounting and record keeping and age of the firm are correlated at $p<0.05$ level of significance. Age and owner experience are correlated at $p<0.1$. All the variables (continuous scaled) are positively correlated indicating their contribution to the growth of CSI. With correlation coefficients of 55.4%, 34.7%, 34.2%; management know-how, market access, and support CSIs get respectively showed relatively a strong association.

As observed in the Table 9, firm age and age of the owner with correlation coefficients of -36.4% and 25.1% respectively were weakly correlated with average capital growth. However, firm category and location were insignificantly negatively correlated. As postulated by Jovanovich model of firm growth, amongst samples of surviving enterprises, younger organizations grow faster. In like manner, the link between average capital growth and firm age is negative in our sample, and the negative sign of the coefficient for firm age was statistically significant at the 5% level, showing that growth slows as the firm gets older.

4.3 Correlation tests: average employment growth rate as proxy for CSI growth

Employment growth was significantly ($p<0.05$) correlated to finance access, management competency, market access, accounting and record keeping, support CSIs get, and firm age. While government rules and regulations were negatively correlated to employment growth, infrastructure and technology were correlated insignificantly ($p>0.05$) with correlation coefficients of 0.131 and 0.145 respectively. Javanovich's theory of younger firms growing faster than old firms hold valid since firm age was significantly ($p<0.05$) negatively correlated. The relationship between average employment growth and firm age was also found negative with coefficients of -0.350 statistically significant at 1 percent

significant level, indicating that in the sample dataset, growth decreases at increasing rate with age of the firm.

Table 9. *Pearson correlation analysis with capital and employment growth as proxy for CSI growth*

Variables	**ACG[1]**	**Sig**	**AEG[2]**	**Sig**
Access to finance	0.160	0.108	0.305	0.002
Management competency	0.554	0.000	0.403	0.000
Market access	0.347	0.000	0.320	0.001
Infrastructure	0.094	0.346	0.131	0.190
Technology and innovation	0.086	0.390	0.146	0.144
Support CSIs get	0.342	0.000	0.249	0.012
Accounting and record keeping	0.323	0.001	0.337	0.001
Government rules and regulations	0.133	0.183	-0.080	0.424
Gender dummy	-0.084	0.399	-0.060	0.547
Age dummy	-0.251	0.011	0.000	0.999
Education dummy	-0.083	0.408	0.056	0.574
Marital dummy	0.156	0.117	-0.169	0.090
Firm age dummy	-0.364	0.000	-0.350	0.000
Experience dummy	0.254	0.010	0.142	0.156
Category dummy	-0.048	0.635	-0.066	0.511
Finance source dummy	0.085	0.396	0.027	0.790
Location dummy	-0.009	0.925	0.117	0.241
Sector dummy	0.019	0.851	-0.014	0.886

4.4 Econometric analysis: Degree of predictor variables explaining the CSI growth in Thimphu Thromde

The MLR test results with the predictor variables are summarized in the Table 10 and 11. The R-squared values for

[1] Average Capital Growth
[2] Average Employment Growth

average capital growth and average employment growth were 0.424 and 0.381 respectively. This means the variables fitted in two models explained 42.4 percent of variations with regard to average capital growth and 38.1 percent for average employment growth. However, the remaining 57.6% of changes in average capital growth and 61.9% of changes in average employment growth were caused by other factors that are not included in models. Furthermore, the overall significance of two models, as determined by their respective F-Statistics of 3.398 and 2.837, with p-values of 0.000 and 0.001, demonstrated that these models were well fitted at the 1% level of significance ($p<0.01$).

Access to finance indicated a coefficient estimate of -0.012 and 0.019 with average capital growth and average employment growth respectively. While capital growth had no significant relationship with finance access, average employment growth was statistically significant at 5 percent significance level. This implied that one-unit increase in access to finance has the probability of increasing the employment growth by one percent. On the other hand, the negative coefficient for capital growth implied that respondents' rating on access to finance was relatively poor. However, considering p-value of finance access was statistically significant at 5 percent for average employment growth, the null hypothesis is rejected and the alternate hypothesis is accepted, meaning there is significant relationship between finance access and CSI growth.

At the one percent significance level, respondents' perception on management know-how was statistically significant for average capital growth while it was insignificant ($p>0.05$) for average employment growth. Similarly, the null hypothesis is rejected and the alternate hypothesis is accepted. Thus, there was significant positive relationship between management competency and CSI growth. The finding is consistent with Aynadis & Mohammednur (2014). Many studies (Bates,1990; Kohtamäki et al., 2013; Yadergal et al., 2019) have associated higher education as significant proxy for better management know-how, however, this study indicated no significant

relationship between education level and management know-how.

Technology and innovation variable had coefficient estimates of -0.036, and .003. It was statistically significant ($p<0.05$) for average capital growth in contrast to average employment growth which showed statistically insignificant correlation ($p>.05$). Since the (p-values) of technology access was statistically significant in relation to average capital growth, the null hypothesis is rejected and alternate hypothesis is accepted, which means there is a significant relationship between technology and CSI growth. Similar conclusions were drawn by Khalique et al (2018); Wang et al (2021) and Harrison et al. (2005).

The support CSIs get had coefficient estimates of 0.045 and -.005. Capital growth was significantly related at 5 percent level while employment was insignificantly correlated ($p>0.05$). The finding is consistent with Yadergal et.al (2019).

Government rules and regulations was statistically significant at five percent significance level with average employment growth while no predicative capability was evident with average capital growth. Because the P-values of government rules and regulations showed significance at least in relation to employment growth, the null hypothesis is rejected and alternative hypothesis is accepted. This finding is unlike Yadergal et. al (2019) who reported government rules and regulation had no predictive capability for both capital and employment growth.

Accounting and recordkeeping, technology, infrastructure and market access did not show significance (either positively or negatively) to any of the dependent variable. However, infrastructure and market access were statistically insignificant ($p>.05$) with average capital growth while technology and innovation were statistically insignificant ($p>.05$) with average employment growth. This implied that CSI owners rated poorly on these variables thus indicating the

requirement for more interventions from the government and other relevant stakeholders so that business environment can improve.

Age of the firm was statistically significant ($p<0.05$) with coefficient value of -.069 in relation to average employment growth unlike average capital growth which showed significance at 10 percent level with marital status. One-year increase in age of the firm decreased the employment growth by six percent indicating younger firms grew faster as theorized by Javanovich model. Likewise, married owners grew significantly faster than those non-married counterparts with coefficient estimate of 0.046. Meanwhile, gender also had no effect on the growth of CSI unlike Radipere & Dhliwayo (2014) who reported statistically significant difference between the mean value of gender and business performance.

Table 10. *Multiple linear regression analysis with capital growth as dependent variable*

Variables	Coef.	Robust Std. Err.	t-value	p-value	[95% Interval]	Confidence	Sig
Access to finance	-0.012	0.017	-0.72	0.471	-0.046	0.021	
Management competency	0.052	0.016	3.220	0.002	0.020	0.084	***
Market access	0.005	0.017	0.320	0.747	-0.028	0.039	
Infrastructure	-0.002	0.014	-0.15	0.878	-0.029	0.025	
Technology and innovation	-0.036	0.019	-1.93	0.058	-0.074	0.001	*
Support CSIs get	0.045	0.022	2.01	0.048	0.000	0.089	**
Accounting and record keeping	0.011	0.014	0.81	0.420	-0.017	0.039	
Government rules and regulations	-0.001	0.020	-0.07	0.946	-0.041	0.038	
Gender dummy	0.019	0.023	0.83	0.409	-0.027	0.065	
Age dummy	-0.049	0.065	-0.75	0.457	-0.179	0.081	
Education dummy	-0.013	0.022	-0.59	0.560	-0.056	0.030	
Marital dummy	0.046	0.026	1.73	0.087	-0.007	0.098	*
Firm age dummy	-0.050	0.038	-1.31	0.193	-0.125	0.025	
Experience dummy	0.009	0.029	0.29	0.770	-0.050	0.067	
Category dummy	-0.011	0.025	-0.44	0.664	-0.060	0.038	
Finance source dummy	0.012	0.032	0.37	0.712	-0.052	0.076	
Location dummy	-0.024	0.027	-0.88	0.383	-0.078	0.030	
Sector dummy	0.011	0.033	0.34	0.735	-0.055	0.078	
Constant	2.326	0.262	8.89	0.000	1.806	2.846	***

Mean dependent variable	2.314	SD dependent variable	0.127
R-squared	0.424	Number of observation	102
F-test	3.398	Prob > F	0.000
Akaike crit. (AIC)	-150.297	Bayesian crit. (BIC)	-100.423

Note: *** p<.01, ** p<.05, * p<.1

Table 11. *Multiple linear regression analysis with employment growth as dependent variable*

Variables	Coef.	Robust Std. Err.	t-value	p-value	[95% Interval]	Confidence	Sig
Access to finance	.019	.008	2.37	.020	.003	.036	**
Management competency	.014	.009	1.59	.116	-.003	.031	
Market access	.014	.010	1.34	.185	-.007	.035	
Infrastructure	-.001	.008	-0.18	.859	-.018	.015	
Technology and innovation	.003	.009	0.35	.730	-.014	.020	
Support CSIs get	-.005	.013	-0.39	.697	-.031	.021	
Accounting and record keeping	.010	.009	1.06	.291	-.009	.028	
Government rules and regulations	-.031	.014	-2.23	.029	-.060	-.003	**
Gender dummy	.022	.015	1.43	.158	-.009	.052	
Age dummy	.025	.040	0.61	.544	-.056	.105	
Education dummy	.017	.014	1.26	.213	-.010	.044	
Marital dummy	-.024	.015	-1.57	.121	-.055	.007	
Firm age dummy	-.069	.036	-1.92	.058	-.140	.002	*
Experience dummy	-.025	.029	-0.87	.389	-.083	.033	
Category dummy	-.006	.017	-0.33	.743	-.039	.028	
Finance source dummy	.002	.018	0.11	.915	-.033	.037	
Location dummy	.020	.014	1.44	.154	-.007	.047	
Sector dummy	-.012	.019	-0.62	.536	-.050	.026	
Constant	2.656	.169	15.71	0.00	2.32	2.992	***

Mean dependent variable	2.734	SD dependent variable	0.077
R-squared	0.381	Number of observation	102
F-test	2.837	Prob > F	0.001
Akaike crit. (AIC)	-245.112	Bayesian crit. (BIC)	-195.237

Note: *** p<.01, ** p<.05, * p<.1

5. Conclusion

Using proportionate stratified random sampling technique, an online self-administered survey was undertaken where 102 CSI owners have completed the survey form. The list of CSI owners (sample frame) was obtained from Department of Cottage and Small Industry (DCSI), MoEA, Thimphu who consented as the industry partner for this industry research project. The sample frame included a total of 6,652 formally registered CSI owners under Thimphu Thromde which are generally grouped under three categories namely; production and manufacturing, services and contract.

Descriptive analysis has shown that majority (88.2%) of the CSIs in Thimphu Thromde is registered under sole proprietorship. Likewise, 46% revealed that the source of start-up capital for their business was through 'own savings' while 20.6% had taken loan from the financial institutes. Although respondents' perception on access to finance was relatively lower (mean score 2.27 on the scale of 1 to 5), inferential analysis showed statistically significant relationship between access to finance and average employment growth while it was insignificant with average capital growth. This partly shows that finance access is an important predictor for CSI growth, particularly in terms of employment generation.

The finding also revealed that respondents' perception on management know-how is significantly correlated to average capital growth while on other hand the relationship with average employment growth was weak. This means respondents who rated high on management traits such as decision making, communication, leadership had higher capital growth rate but not necessarily on employment growth.

Like many earlier studies have reported, technology and innovation is regarded as significant predictor for business growth by the CSI owners of Thimphu Thromde. In particular, a strong relationship was observed between respondents' perception on technology and average capital growth. In other

words, CSI owners who rated high on statements related to technology and innovation had better performance in terms of capital accumulation.

There was weak relationship between the support MSEs get from the government, friends, NGOS, their families and relatives. But there was no significant relationship between government rules and regulations and MSEs transformation.

Accounting and record keeping, infrastructure and market access showed no significance to either of the two dependent variables in the model. This implied that respondents' rating on these domains were relatively low indicating the lack of contribution to the overall businesses' growth. These statistics therefore points out an evidence of performance gap in CSI sector against which necessary interventions are required.

6. Limitations for the study

This study was limited by time and finance. Thus, inferences drawn on this study is based on sample size with 10% margin of error. Although, many studies have used such sampling proportion, in social science it is usually recommended that 95% confidence interval is met to to draw an inference. Therefore, outcome of study can be more robust, if similar studies can be conducted with adequate sample size. The findings will be even more robust, if findings can be complimented by qualitative study design. Furthermore, critical analysis can also be furnished if studies could be conducted from the lens of performance measures like return on asset (ROA), profitability, and revenue generated by the enterprises.

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