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How Business Age and Gender Shape the Path from Turnover to Taxable Income via Operational Efficiency: Empirical Evidence from Nepalese Taxpayers

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Abstract
Taxes not only reflect power and legitimacy of the government, but also redistribute private and public resources to the society. Tax policies, tax compliance, taxpayers' business age and experiences and sexual differences shape the size of taxable income. The paper aims to estimate the moderation effect of business-age and sexual differences on the the relationship between the transaction volume on the taxable income through the operational efficiency. The empirical findings from the analysis of the large dataset of income tax returns derived from the Inland Revenue Department support that transaction volume significantly positively affect taxable income; as the age of the business increases, the effect of the transaction volume on the operational efficiency reduces. The operational efficiency significantly and positively affects taxable income of both female and male taxpayers. As the age of business firm grows, the role of transaction volume in determining the taxable income diminishes more for female taxpayers compared to male taxpayers indicating that the operational efficiency and the reporting behavior of the female taxpayers are better than male taxpayers. The findings contribute to the understanding of relationships between business turnover, efficiency, taxable income in the context of life cycle of the business organization and sexual differences of the owners. It provides policy inputs to the tax policy makers, implementer, tax experts, and academicians Researchers are encouraged to undertake a comprehensive research endeavor to find immediate and ultimate causal factors.

Keywords: Income Tax Returns, Turnover, Taxable Income, Operational Efficiency, Business-age, VAT, Gender, Moderated Mediation Effect

Introduction
Tax is an obligation of an individual to the society that establishes relationship that individuals have with their government and -through their government - with their society as a whole [1]. Taxes are of different nature and are collected from different sources including income, wealth, property, consumption, and transactions. Income taxes are subject to the incomes of the individuals and incorporated entities and incomes are directly and/or indirectly affected by the economic transactions and operational efficiency of the individuals and the corporations. In course of studying Swiss banking sector performances, Blatter & Fuster, (2022) found a strong positive relation between efficiency and profitability whereas Neilson, (2024) found that firms' processes are positively associated with profit, and both process and profit contribute to the decreasing influence of firm agency theory in his study of Australian financial planning firms [2,3].

In pursuit of profits, every business firm tries to increase production, productivity and operational efficiency. Tax policy shapes the size of the taxable income through the tax incentives, investment allowance, and business loss set off provisions of the tax laws [4]. It may differ with the stage of organization's life cycle; at the initial stage, individuals might face losses but at the growth and maturity stages, there might be taxable income. The extant researches assert that initially transaction costs exceed income, but it may gradually be reduced as the business firms grow old and gain business experience in the allocation of resources and the firm can generate profits and taxable income [5-8]. Business output, operational efficiency and taxable income may be affected by the age of business. As firm gets older, entrepreneurs earn experience, knowledge, skills, and ability that could be instrumental to make rational decisions.

Moreover, there might be gender difference in causal links among the business transactions, operational efficiency,

and taxable income. Although males are dominant in socio-economic realm of Nepal, females' participation in the employment, self-employment, and service sector is in increasing trajectory. World Bank Group, (2023) survey estimated average age of business establishment is 16.8 years and around 14.7 % business firms are owned by the female in spite of different constraints in terms of political instability, poor access to finance and exorbitant tax rates [9]. Production sector registers negative growth rate; trading and service sectors are lingering with a minimal growth rates due to major constraints like poor infrastructure, high cost of production, inefficient processes and delivery system, low and unskilled manpower, and high cost of funds, among others [10]. The efficiency of Nepalese entrepreneurs has been decreasing over the years due to the under-utilization of business assets, high transaction and compliance costs.

The paper tries to find the answers to the following question:
• Whether the business-age affect relationship between transaction volume and the operational efficiency of the taxpayer?
• Whether the sexual difference of the taxpayer affect the relationship between the operational efficiency and their taxable income?
• Whether the conditional effect of business-age on the relationship between the transaction volume and the taxable income differs between male and female?
This paper includes seven sections. It begins with a literature review, theories and hypotheses, methodologies, data analysis and interpretation, discussion, and conclusion.

Theories and Hypotheses

Taxable Income, Transaction, Efficiency

Taxable income is the real tax base for the income tax. The actual determination of taxable income has to recognize that an individual's income may have different sources including wages and salaries, interest, income from investment or dividends and business income [4]. As per Income Tax Act, 2058 (2002) the income from investment like rent, interest, dividend incomes, capital and windfall gains are taxed under scheduler taxation system while wages, salaries and business incomes are subject to comprehensive tax structure and hence included together to compute total inclusion (or total transaction) of the individual taxpayer from which specified expenses, standard and itemized deductions are allowed to deduct therefrom to compute taxable income for the year. Tax is affected to the extent that taxpayer alters their behavior in response to the differential treatment of certain source of income and /or the provision of tax credit [11]. Taxable income may be lower than business profits as income tax laws have provided for the incentives in the form of accelerated depreciation, investment allowance to encourage investors to invest in capital equipment that lead to reduced taxable income. Accelerated depreciation is a cost of an asset to be written off at a rate that is faster than the economic rate of depreciation [12].

Moreover, the taxable income also contingent upon the cost effectiveness. The cost effectiveness combines concerns with efficiency, economy, and effectiveness [13]. The cost effectiveness increases when the taxable transaction increases with constant or reducing statutory admissible expenses or when the rate of increment in taxable transaction is higher than that of the statutory deductible expenses. Total quality management (TQM) philosophy focuses on improving productivity and quality, and lowering the cost of production and delivery [14]. While explaining the theory of constraint, Goldratt & Cox, (1984) argued for identifying and managing the most dominant systemic constraint along with operational expenses, and inventory to improve throughput [15]. The higher output with minimal input leads to higher throughput and thereby higher taxable income. Modern tax principles focus on minimization of market distortions, compliance and administrative costs to improve operational efficiency of the taxpayers [4].

Resource allocation and distribution is a critical affect the operational efficiency that determines size of business income and taxable income. Operational efficiency is what occurs when the right combination of people, process and technology come together to enhance the productivity and value of any business operation, while driving down the cost of routine operations to a desired level [16]. A low efficiency ratio is typically supposed to be an evidence of suboptimal utilization of resources, irrational and inexperienced management decision, and erosion of tax base. It may be real or surreal; It may be due to deliberate delinquency in reporting of income or aggressive tax planning by the taxpayer and imperfect law enforcement by the tax authorities. Tax planning is a business strategy to minimize taxable business income under the provisions of tax laws. Tax avoidance activity is a basic tax behavior that companies do to produce tax savings [17].

Business Age Perspectives

Boulding, (1950) conceptualized organization life-cycle to be studied before taking any strategic decisions to manage organizational performance [18]. Ford, (2018) argued that initially, organizations struggle to survive; when they get mature, they develop internal system and external reputations and then decline with diminishing efficiency, market share, and profits. Greiner, (1972) argued that organizations are adaptive to the goals and contexts based on experience and lesson learned [19,20]. He argues that younger organizations face different challenges and hence make different decisions in respond to these challenges compared to older organizations. The organization keeps transforming; internal resources and capabilities develop; build support from business networks functions get specialized and formalized in maturity stage [5,8,21]. They develop capabilities to deploy resources and to collect and process information to acquire more knowledge assets that eventually help increase business transaction and operational efficiency [6,7,22]. Some younger organizations bear a heavy burden of liability of newness and try to gain legitimacy [23-25]. Given the

theoretical arguments, the following hypothesis is test to find the empirical answer to the research problems.

Hypothesis 1: Transaction volume affects operational efficiency of the business firm. As age of the business grows, the transaction volume help increases the operational efficiency of the business firm.

Gender Perspectives

Socio-biologist argue that men are genetically aggressive and dominant compared to women; primitive society divided the functions and role of male and female; male were assigned heavy and laborious jobs, warfare, power accumulation, income earning, and security related works, while female were responsible for child care-giving, rearing, and different household matters that made female weak and subordinate to the male in political, social, and economic activities. The social learning theory argues that reinforcement, punishment, and imitation shape the gender-typed behavior while the social cognitive theory postulates attention, self-regulation, and self-efficacy shape the behavior of male and female in society; people come across different events and people but pay attention to the most interesting issues and weed out uninteresting issues; change their behavior to adopt the most interesting jobs; and develop their psychological and behavioral capabilities to accomplish the jobs. Social role theory argue that society's division of labor by gender guides gender differences in behavior [26,27].

Hofstede, (1983) argued for four measures to distinguish national culture of the nations and such measures had a major impact on employee's work related values and attitudes; the society where there is a high power distance, the power in the institutions and organizations is unequally distributed [28]. Nepal is no exception; there has been a high power distance in Nepalese society due to social values, beliefs, norms, customs that reckons male superior to female. Females in western hemisphere came out of household activities and compete with male in all sphere of political, social and economic activities that gradually transcend to the eastern hemisphere. Over the past five decades, females in Nepal are trying to break down the shackle of household jobs and getting interested to indulge in business. Gender- neutral evolutionary perspectives posit that it is the environment that shape male and female behavior to be adaptive and flexible as the environment warrant [29]. The constitutional and legal framework have provided for positive discrimination for female to empower them in political, social, and economic aspects and hence Nepalese women are aggressively interested in business, employment and self-employment activities. Nepalese society is largely risk-averse society; people think threatened by uncertainty and ambiguity; and there is a low level of tolerance for unusual ideas and behaviors that constraints creative, innovative and risk-taking endeavor. Given the theoretical arguments, the following hypotheses are test to find the empirical answers to the research problems.

- **Hypothesis 2:** Operational efficiency affects taxable income of the business firm. As the operational efficiency increases, its effect on the taxable income differs in male and female-owned business firm.

- **Hypothesis 3:** Indirect effect of transaction volume on taxable income through operational efficiency differs in different business-age groups of male and female taxpayers.

Methodology

The research is designed to test extant theoretical arguments that the taxable income is dependent on the transaction volume, operational efficiency, among others; that the causal relations among transaction volume, operational efficiency, and taxable income vary in different phases of the organization's life; and such relations may vary in male and female-owned organization and other policy variables. These theoretical arguments are tested by employing deductive approach. A first and second stage dual moderated moderated mediation model is conceptualized in line with the arguments of [30]. Hayes & Preacher, (2013) define moderated mediation models as conditional process models that are used for evaluation of whether an indirect effect is moderated by another variable or why and under what conditions variables are related to one another [31]. The test of moderation can be useful for evaluating the boundary conditions under which associations between two (or more) variables occur [32]. Moderator variables may enhance, reduce or change the magnitude and /or direction of a relationship between an independent variable and a dependent variable.

Data

This paper is prepared by analyzing income tax returns (ITR-DO3) submitted by the individual taxpayers for the fiscal year 2023/24. The dataset includes names and other signs of identification anonymized 297,015 ITR dataset derived from the Inland Revenue Department (IRD).

Measure

The taxable income is the outcome variable (Y) that refers to the total taxable income of the individual taxpayers pooled together wage, salaries, and business incomes reported in the Annex 5 and 6 of the ITR-D03. The transaction volume is the predictor variable (X) that refers to the total amount of inclusion in the form of wages, salaries, and business income. The operational efficiency is the mediating variable (M) that refers to the ratio of inclusions to the expenses. The business-age is the primary moderator (W) that refers to the time period in years calculated from the date of registration in the tax administration till the end of 15 July 2023. The gender of the taxpayers is the secondary moderator (Z). All variables, except the gender, are measured in ratio scale. Under the dichotomous variable, female taxpayers are coded by 0 and male by 1.

Empirical Strategies

Transaction volume is antecedent to the operational efficiency; the operational efficiency as a mediating variable is playing both as an effect of transaction volume and cause for the taxable income. Transaction volume are exogenous to the taxable income. The business-age and gender are moderators that affect the indirect relation of taxable transaction with the taxable income through the operational efficiency.

Reported transaction amount and taxable income were non-linearly distributed and hence are transformed into natural logarithmic form in order to smoothen and normalize the distribution of the data-set and to improve the model fit. The operational efficiencies of the taxpayers are measured into the ratio of sales to expenses. Following statistical model is designed drawing on Hayes, (2018) model to test the hypotheses and to estimate the regression coefficient and their directions [30].

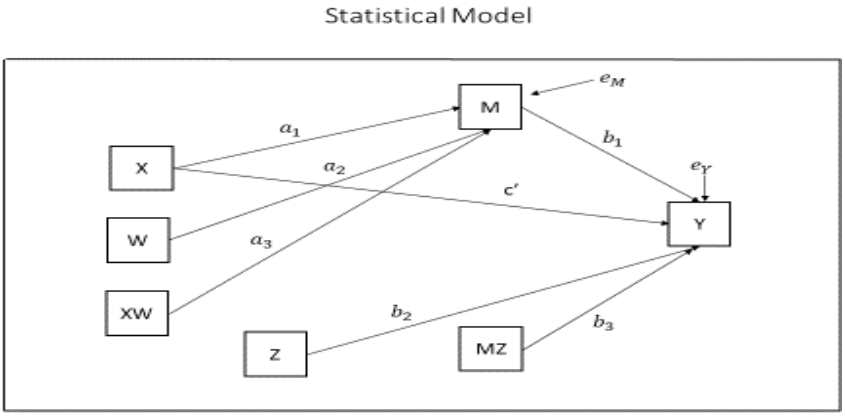

Figure 1: Statistical Model of First and Second Stage Dual Moderated Moderated Mediation Model

Hayes, (2015) ; Edwards & Lambert, (2007); Preacher, et. al., (2007) proposed following two linear regression equations for the first and second stage dual moderated moderated mediation model:

$$M = a_0 + a_1 X + a_2 W + a_3 XW + e_M \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$Y = b_0 + c'X + b_1 M + b_2 Z + b_3 MZ + e_Y \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where a_0 is intercept of predictor, a_1 is regression coefficient of predictor, a_2 is the regression coefficient of primary moderator, a_3 is interaction effect of predictor and primary moderator, eM is the error term for the estimation of mediator, b_0 is intercept of mediator, b_1 is regression coefficient of mediator, b_2 is the regression coefficient of secondary moderator, b_3 is interaction effect of mediator and secondary moderator, eY is the error term for the estimation of outcome variable [33-35].

The moderated moderated mediation effects are tested using Model 21 of the PROCESS macro [30]. The log value of the transaction volume is represented by logtran, taxable income by loginc, business-age by bage, and operational efficiency by eff. The business-age is allowed to moderate the indirect path from business transaction to operational efficiency and from operational efficiency to taxable income in the condition of gender of the taxpayers in order to estimate the conditional effect of business-age in male and female taxpayers. Predictor, moderator and mediator are mean centered prior to creating product terms, and the index of moderated mediation was tested with a 95% bias-corrected bootstrap confidence interval based on 1,000 replications.

Data Analysis and Interpretation

In the model, the business-age (bage) is the first stage moderator of the effect of business transaction on operational efficiency (eff), and gender is the second stage moderator of the effect the operational efficiency on the taxable income. PROCESS macro provided estimates of the indirect effect of transaction volume for 16th (W = 3.9315 years), 50th (W = 8.6356 years), and 84th percentile of business-age (W = 17.4932 years) as well as the bootstrap confidence interval (CI) for reference. The effect of the business-age is estimated for younger (W = 3.9315 years), average age (W = 8.6356 years), and older age (W = 17.4932 years).

Table 1 depicts the regression coefficients and standard errors. Transaction volume is negatively related to the operation efficiency (a1 = -0.6346, $p < 0.001$) indicating that the operational efficiency does not increase with one- unit change in business transaction. The business age is positively associated with the operational efficiency (a2 = 0.2061, $p < 0.001$) indicating that the operational efficiency does increase with one-unite change in the business-age. However, the interaction effect of transaction volume and business-age on the operational efficiency is found negative (a3 = -0.0269, $p < 0.001$) indicating that the operational efficiency does not necessarily increase with the change in business transaction and business-age. The relation between operational efficiency and the taxable income is positive (b1 = 0.022, $p < 0.001$) indicating that the taxpayers' taxable income significantly depends on the operational efficiency of the

taxpayers in general but the interaction effect of the operational efficiency and gender is found negative (b3 = - 0.0154, p <0.001) indicating that there are significant sexual differences in terms of the operational efficiency and reported taxable income. The direct effect of transaction volume on the taxable income is significant (c' = 0.5711, p< 0.001). Putting the regression coefficients depicted in Table 1 in the equation (1) and (2), the resulting equations for mediating effects of the operational efficiency and for the taxable income are as follows:

$$\acute{M} = 4.0378 - 0.6346X + 0.2061W - 0.0269XW$$

$$\hat{Y} = 1.5351 + 0.5711X + 0.022M + 0.035Z - 0.0154MZ$$

Table 1: Ordinary Least Squares Regression Coefficient from First Model (When Z = gender)					
	M: eff		**Y: loginc**		
	Path	**Coefficient (SE)**	**path**	**Coefficient (SE)**	
Constant	a0 →	4.0378 (0.2070)***	b0 →	1.5351 (0.0070)***	
X: logtran	a1 →	-0.6346 (0.0307)***	c' →	0.5711 (0.0010)***	
W: bage	a2 →	0.2061 (0.0162)***			
Z: gender			b2 →	0.0350 (0.0021)***	
XW: logtran x bage	a3 →	-0.0269 (0.0024)***			
MZ: eff x gender			b3 →	-0.0154 (0.007)***	
M: eff			b1 →	0.0220 (0.007)***	
	R2	0.0118	R2	0.5267	
95% bootstrap CI					
Moderated moderated mediation Index →		**0.0004**	**← a3 b3**	**0.0002**	**0.0007**
Conditional moderated mediation by bage (W) among:					
Female (Z= 0)		-0.0006	← a3b1 + a3b3Z	-0.0009	-0.0004
Male (Z= 1)		-0.0002	← a3b1 + a3b3Z	-0.0003	-0.0001
Conditional effects of the X (logtran) at moderator W (bage):					
Yonger (W = 3.9315)		-0.7402	← a1 + a3W	-0.7858	-0.6947
Average age (W = 8.6356)		-0.8666	← a1 + a3W	-0.8999	-0.8333
Older (W = 17.4932)		-1.1045	← a1 + a3W	-1.1485	-1.0606
Conditional effects of the M (eff) at values of Z (gender):					
Female (Z=0)		0.022	← b1 + b3Z	0.0207	0.0234
Male (Z=1)		0.0066	← b1 + b3Z	0.0064	0.0068
Note: Regression coefficients ae unstandardized; standard errors are in parentheses; Bootstrap sample size = 1000; Confidence interval (CI); * p < .05, ** p < 0.01, *** p < 0.001					

Table 1: Ordinary Least Square Regression Coefficient from the First Model (When Z = Gender)

Conditional Effect of Transaction Volume (X) on Operational Efficiency (M)

From equation (1), the conditional effect of the transaction volume on the operational efficiency is estimated by $a_1 + a_3W$. Putting the value of a1, a3 and W, the effect of the transaction volume on the operational efficiency is estimated to be -0.7402 for younger, -0.8666 for average, and -1.1045 for older age groups of the individual taxpayer. Table 1 shows that the estimated indirect effects are statistically significant (95% bootstrap CI = -0.7858 to -0.6947 for the younger, -0.8999 to -0.8333 for average, and -1.1485 to -1.0606 for older age groups). The conditional moderated mediation indices confidently indicate that the indirect effect of taxable transaction is negatively related to business- age of the taxpayers because 95% bootstrap CIs are entirely negative. Keeping any moderation of the indirect effect of transaction volume by gender, business age negatively moderates the indirect effect of the transaction volume as shown in Figure 3. The inference of the slop of the lines is that as transaction volume increases, the operational efficiency decreases in all business age groups, however, the lowest rate in younger (-0.7402), and the highest rate in older business-age group (-1.1045). The first hypothesis that as age of the business grows, the transaction volume help increases the operational efficiency of the business does not find empirical support.

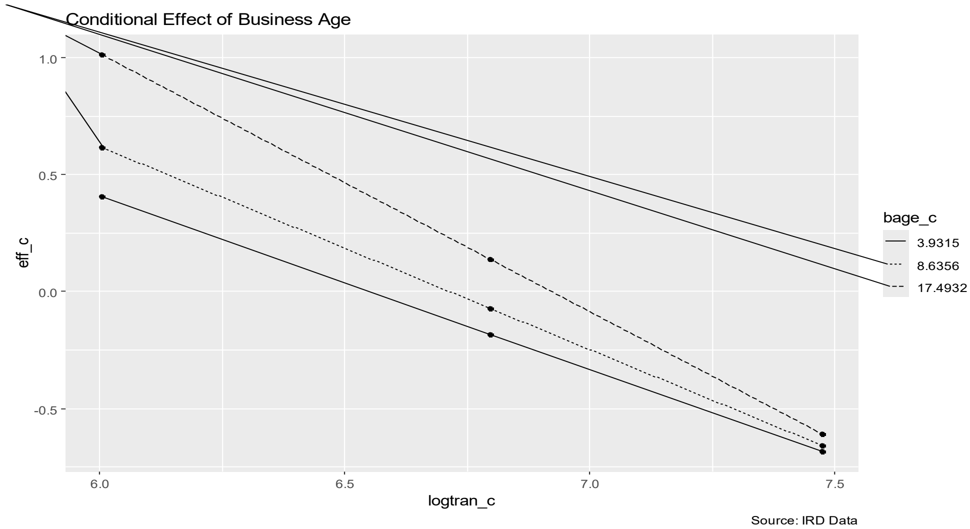

Figure 2: Conditional Effect of Business Age

Conditional Effect of Operational Efficiency (M) on Taxable Income (Y)

From equation (2), the conditional effect of operational efficiency on the taxable income is estimated by $b_1 + b_3Z$. Putting the value of b1, b3 and Z, the effect of operational efficiency on the taxable income is estimated to be 0.0066 for male (Z = 1) and 0.022 for female (Z = 0) taxpayers. Table 1 shows that the estimated indirect effects are statistically significant (95% bootstrap CI = 0.0064 to 0.0068 for the male and 0.0207 to 0.0234 for the female). These conditional moderated mediation indices imply that the indirect effect of operational efficiency on taxable income is positively related to male and female because 95% bootstrap CIs are entirely positive. Keeping any moderation effect of the business age on the indirect effect of transaction volume, gender positively moderates the indirect effect of the transaction volume as shown in Figure 4. The inference of the slop of the lines is that as the operational efficiency increases, the taxable income also increases, however, the rate of increase of taxable income is higher in females (0.022) than male (0.0066). Although the mean value of the taxable income of male is higher than female in absolute term, yet the positive effect of operational efficiency on taxable income is lower in male category compared to female category. As the efficiency of the female taxpayer increases, the growth rate of taxable income will be higher compared to male taxpayer. The second hypothesis that as the operational efficiency increases, the taxable income of male and female-owned business increases find empirical support.

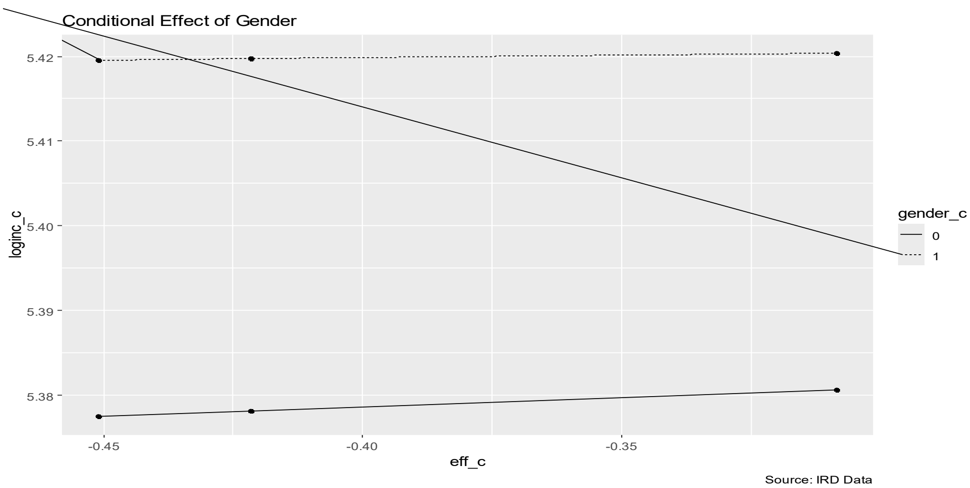

Figure 3: Conditional Effect of Gender

Indirect Effect of Transaction Volume (X) on Taxable Income (Y) through Operational Efficiency (M) Under the Condition of Business Age (W) and Gender (Z)

From the equation (1) and (2), the indirect effect of business transaction volume on taxable income through the mediation of operational efficiency is estimated by:

$$= (a_1 + a_3 W)(b_1 + b_3 Z) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Fitting the values in equation (3), the indirect effect of transaction volume on taxable income through operational efficiency is estimated to be -0.0049 for younger, -0.0057 for average age, and -0.0073 for older business-age in male category and -0.0163, -0.0191, and -0.0243 respectively in female category as shown in Table 2. The sign of the effects

implies that as the business-age increases, the indirect effect decreases both in male and female. The indirect effects in male category are lower than that of female category.

Moderated Mediation Effect of Business Age (W) on the Indirect Effect of Transaction Volume (X) on Taxable Income (Y)

Both moderating variables, business-age (W) and the gender (Z) moderated on the indirect effect of business transaction volume on taxable income through operational efficiency. Equation (3) can be elaborated as:

$$= a_1b_1 + a_3b_1W + a_1b_3Z + a_3b_3WZ \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

$$= a_1b_1 + (a_3b_1 + a_3b_3Z)W + a_1b_3Z$$

The relations of the business-age with the indirect effect of business transaction volume conditioned on gender is calculated by a3b1 + a3b3Z. It is the index of conditional moderated mediation by the business-age. Putting the value of a3, b1, b3 and Z, the conditional moderated mediation effect of business-age is estimated to be -0.0006 for female taxpayers -0.0002 for the male taxpayers. Table 1 shows that the estimated indirect effects are statistically significant (95% bootstrap CI = -0.0009 to - 0.0004 for female taxpayers and -0.0003 to -0.0001 for the male taxpayers).

Moderated Mediation Effect of Gender (Z) on the Indirect Effect of Transaction Volume (X) on Taxable Income (Y)

Equation (4) can be rewritten as: = a1b1 +a3b1W + (a1b3 + a3b3W)Z

The relationship between gender and the indirect effect of transaction volume is conditioned by the linear function of business-age (a1b3 + a3b3W). It is the index of conditional moderated mediation by gender. Putting the value of a1, a3, b3 and W, the conditional moderated mediation effect of gender is estimated to be 0.0114 for younger, 0.0134 for average, and 0.0170 for the older business-age group.

Moderated Moderated Mediation Effect of Business Age and Gender

The moderated moderated mediation index is a3b3 (= 0.0004) which is statistically significant because 95% bootstrap CI does not include zero; it ranges from 0.0002 to 0.0007. However, the rate of change in the moderation by the business-age of the indirect effect of the business transaction volume significantly differ in female and male owned business. It shows that as the age of business grows, the indirect effect of transaction volume on taxable income through operational efficiency significantly decrease at the rate of -0.0006 for female-owned business and at the rate of -0.0002 for male owned business. It shows that the negative moderated moderated mediation effect of the business-age and gender is lower in case of male-owned business compared to female-owned business. The third hypothesis that as the age of business grows, the indirect effect of transaction volume on taxable income through operational efficiency differs in male and female-owned business find empirical support.

Total Effect of First Model

Total effect (c) is the sum of direct effect and indirect effect as shown in Table 2. Total effects are estimated by the formula $c = c' + (a_1 + a_3W)(b_1 + b_3Z)$. The direct effect of transaction volume on the taxable transaction is fixed that is represented by c′ but the indirect effects of transaction volume on the taxable transaction through the operational efficiency under the condition of business-age and gender are not fixed, rather different because the indirect effects are linear functions of business-age and gender. From equation (3), the indirect effects are estimated for younger, average, and older business-age in the male and female categories.

Total Effect of Transaction Volume (X) on Taxable Income (Y) through mediation of Operational Efficiency (M) under the moderation of Business Age (W) and Gender):						
		Male			Female	
Business-age Group	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
Younger (W=3.9315 years)	0.5711	-0.0049	0.5662	0.5711	-0.0163	0.5548
Average (W= 8.6356 years)	0.5711	-0.0057	0.5654	0.5711	-0.0191	0.5520
Older (W=17.4932 years)	0.5711	-0.0073	0.5638	0.5711	-0.0243	0.5468

Table 2: Direct and Indirect Effects of Transaction Volume (X) on Taxable Income (Y) Under the Moderation of Business Age and Gender

Discussion

The Effect of Business Age

In the first part of the research, I tried to find answer as to whether transaction volume affects the operational efficiency of the individual taxpayers and subsequently whether the age of the business help increase the effect of transaction volume on the operational efficiency. PROCESS output showed that there was a sufficient level of empirical support to generalize, in the Nepalese context, that the taxpayers' business transaction significantly affects their operational

efficiency as their longevity in business increase. However, the direction of the relationship between the transaction volume and the operational efficiency was inverse ($a3 = -0.0269$, $p < 0.001$). As the business-age grows, the effect of transaction volume on the operational efficiency reduces. By keeping the effect of gender constant, the conditional effects of the transaction volume on taxable income reduces as the business-age increases; such effect is estimated to -0.7402 for younger (W= 3.9315 years), -0.8666 for average (W= 8.6356 years), and -1.1045 for older groups (W=17.4932 years). It showed that the role of transaction volume to determine taxable income is lower in the senior businessmen compared to their junior competitors.

What could be the reasons for such effects? Given the imperfect market conditions and somewhat stagnant economic growth, the senior businessmen might have opted for reducing their marginal costs rather than increasing business transaction in order to make normal profits for the survival and hence the effect of business transaction on the taxable income in age-old businesses might be lower compared to the newly established business firms. Conversely, newly established business firms might be focused on increasing sales revenue to meet their initial higher average fixed and variable costs and make to make normal profits. Additionally, new business firms might be interested to increase business transaction to use up the incentives and benefits provided by the income tax laws and hence the role of the transaction volume for the newly established business to manage taxable income was found higher compared to the age-old business firms.

The Gender Differences in the Efficiency and Taxable Income

The research found answers to the questions as to whether the operational efficiency affect taxable income and whether the effect differ in male and female-owned businesses. The empirical evidences showed that the operational efficiency significantly affirmatively affected taxable transaction of the taxpayers ($b1 = 0.022$, $p < 0.001$) but the moderation effect of gender on the relationship between the operational efficiency and the taxable income were negative ($b3 = - 0.0154$, $p = 0.007$). Independent of the any moderation effects of the business-age, the conditional effects of the operational efficiency on the taxable income are positive and significantly differs in male and female-owned businesses. Such effects are lower in male-owned businesses (0.0066) than female-owned businesses (0.022). The affirmative moderated mediation implies that as long as the operational efficiency increases, the size of the taxable income increase in both male and female-owned businesses, however, in different scale. If the operational efficiency of female-owned business increases by one-unite, the taxable income of female-owned business will be increased with more rate (0.022) than that of male-owned businesses (0.0066). One of the prominent causes to report relatively higher ratio of taxable income by the female-owned business firm might be the tax policy that provide 10% income tax credit to the females adjustable from the tax liability to be paid. Monetary and industry policies and laws have also positively encouraged females to establish business firm and economic activities. Rather than developing giant corporate business entities, Nepalese businessmen and women are psychologically interested in running family-owned small and medium-type business firms. The proximate reasons for the business fragmentation might be to encourage and engage female members in business activities to get finance from different banks and enjoy tax deductions and allowance. Additionally, they might be interested to stay away from the VAT regime by fragmenting their business transactions into multiple firms.

Moderated Moderated Mediation Effects of Business-age and Gender

I also tried to find the indirect effect of the transaction volume on the taxable income through the operational efficiency under the condition of business age and gender differences. The direct effect of the transaction volume on the taxable income of the business was significant ($c' = 0.5711$, $p < 0.001$) but the business-age reversed the indirect relationship between the transaction volume on the taxable income of both female and male taxpayers. As the age of the female-owned business firm increases, the indirect effect of transaction volume on the taxable income through the operational efficiency reduces more (-0.0004) than that of male-owned business firms. The indirect effect of transaction volume for female-owned businesses is (-0.0006) and for the male-owned businesses (-0.0002).

The empirical evidences confirm that the indirect effects of the transaction volume on the taxable income through the operational efficiency for younger, average and older business-age groups of both male and female categories are significant but negative indicating that as the business-age grows, the role of transaction volume to determine taxable income diminishes and the role of operational efficiency in determining the size of income increases. The indirect effects for younger, average, and older-age female are -0.0163, -0.0191, and -0.0243 and for younger, average, and older-age male are -0.0049, -0.0057, and -0.0073 respectively. The experienced businessmen and/or women might have managed to report higher taxable income through their improved efficiency in increasing sales or reducing costs.

Secondly, they might have less amount of statutory claims on taxable income (in the form of accelerated depreciation, investment allowances, previous years' losses to be set off) that drive up taxable income. Moreover, the role of transaction volume on defining taxable income is found lower for female compared to male taxpayers. It indicates that the female taxpayers are more compliant than male taxpayers in terms of reporting of their transaction, and taxable income.

Conclusion

The paper provides empirically verified answers to the questions as to whether the business-age affect relationship between transaction volume and the operational efficiency of the taxpayer, whether the sexual difference of the taxpayer affects the relationship between the operational efficiency and their taxable income; and as to whether the conditional

effect of business-age on the relationship between the transaction volume and the taxable income differs between female and male taxpayers.

The empirical findings support that the direct effect of the transaction volume on the taxable income is significant and affirmative; however, its indirect effect on the taxable income through operational efficiency for different business- age groups of female and male taxpayers found significant but negative. Moreover, the conditional effect of the transaction volume on the taxable income diminishes as the age of the business grows. Moreover, the conditional effect of the operational efficiency on the taxable income is significantly higher in female taxpayers compared to male taxpayers. As the age of the female-owned business firm increases, the role of the transaction volume on affecting the taxable income through the operational efficiency reduces more than that of male taxpayers.

The findings might be helpful to the tax policy makers, implementer, tax experts, and academicians in understanding the relationships between business turnover, efficiency, taxable income in the context of the business-age and gender of the taxpayers. This research is limited to the analysis of the reported transactions of the individual taxpayers who have filed income tax returns category D03. The ITR submitted by the incorporated entities are not included in the study. Researchers are encouraged to undertake a comprehensive research endeavor to find immediate and ultimate causal factors.

Declarations

I declare that there are no conflicts of interest associated with this study. All research activities were carried out in accordance with established ethical guidelines. All data utilized in this study is authentic and has been obtained from the central office of the Inland Revenue Department of Government of Nepal and informed consent thereof was obtained prior to their submission of data. The view, opinions, findings, and conclusions expressed in this paper do not necessarily reflect the view of the Inland Revenue Department of the Government of Nepal. The author takes the responsibility for any errors or omissions in, or for correctness of, the information contained in this paper.

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Footnotes:

[1] Goldratt & Cox, (1984) discussed about the theory of constraint and argued that the the higher output with minimal input leads to higher throughput.

[2] Besterfield, Besterfield-Michna, Besterfield, & Besterfield-Sacre, (2003) discussed about the TQM to focus on the continuous process rationalization and quality improvement to improve efficiency and efficacy.

[3] Gouveia & Strauss, (1994) argued for taxpayers reporting behavior in response to the differential treatment of certain source of income and /or the provision of tax credit.

[4] Rosenbloom & Kravchuk, (2002) dicussed about the cost effectiveness, efficiency, economy, and effectiveness. The cost effectiveness increases when the taxable transaction increases with constant or reducing statutory admissible expenses or when the rate of increment in taxable transaction is higher than that of the statutory deductible expenses.

[5] Boulding, (1950) floated the idea to study organization life cycle and different measures to be adopted on the basis of stages of the life cycle. Initially, organizations struggle to survive; when they get mature, they develop internal system and external reputations and then decline with diminishing efficiency, market share, and profits (Ford, 2018).

[6] Greiner, (1972) argues that organization's behavior may be cumulative and conjunctive in nature; what they acquire in early stage retain in the later stage in a coherent way. Organizations are adaptive to the goals and contexts based on experience and lesson learned. He argues that younger organizations face different challenges and hence make different decisions in respond to these challenges compared to older organizations.

Appendix 1

********** PROCESS Procedure for R Version 5.0 **********

Written by Andrew F. Hayes, Ph.D. www.afhayes.com Documentation available in Hayes (2022). www.guilford.com/p/hayes3

********** Model: 21

Y: loginc X: logtran M: eff

W: bage Z: gender

Sample size: 297016
Custom seed: 123458
****
Outcome Variable: eff

Model Summary:
R R-sq MSE F df1 df2 p
0.1087 0.0118 43.3838 1184.7234 3.0000 297012.0000 0.0000

Model:
coeff se t p LLCI ULCI
constant 4.0378 0.2070 19.5021 0.0000 3.6320 4.4436

logtran	-0.6346	0.0307 -20.6477	0.0000 -0.6949 -0.5744
bage	0.2061	0.0162 12.6892	0.0000 0.1743 0.2380
int_1	-0.0269	0.0024 -11.2216	0.0000 -0.0316 -0.0222

Product terms key:
int_1 : logtran x bage

Test(s) of highest order unconditional interaction(s): R2-chng F df1 df2 p
X*W 0.0004 125.9234 1.0000 297012.0000 0.0000

Focal predictor: logtran (X) Moderator: bage (W)

Conditional effects of the focal predictor at values of the moderator(s): bage effect se t p
LLCI ULCI

3.9315	-0.7402	0.0232 -31.8562	0.0000	-0.7858 -0.6947
8.6356	-0.8666	0.0170 -51.0281	0.0000	-0.8999 -0.8333
17.4932	-1.1045	0.0224 -49.2442	0.0000	-1.1485 -1.0606

Data for visualizing the conditional effect of the focal predictor:

logtran	bage	eff
6.0033	3.9315	0.4045
6.7965	3.9315	-0.1827
7.4733	3.9315	-0.6837
6.0033	8.6356	0.6156
6.7965	8.6356	-0.0718
7.4733	8.6356	-0.6583
6.0033	17.4932	1.0133
6.7965	17.4932	0.1371
7.4733	17.4932	-0.6104

********** Outcome Variable: loginc
Model Summary:
R R-sq MSE F df1 df2 p

0.7257 0.5267 0.1648 82620.5547 4.0000 297011.0000 0.0000
Model:
coeff se t p LLCI ULCI
constant 1.5351 0.0070 218.8113 0.0000 1.5214 1.5489
logtran 0.5711 0.0010 574.8678 0.0000 0.5691 0.5730

eff	0.0220 0.0007 31.6096 0.0000 0.0207 0.0234
gender	0.0350 0.0021 16.7539 0.0000 0.0309 0.0391
int_2	-0.0154 0.0007 -21.8830 0.0000 -0.0168 -0.0141

Product terms key:
int_2 : eff x gender

Test(s) of highest order unconditional interaction(s): R2-chng F df1 df2 p
M*Z 0.0008 478.8659 1.0000 297011.0000 0.0000

Focal predictor: eff (M) Moderator: gender (Z)

Conditional effects of the focal predictor at values of the moderator(s): gender effect se t p
LLCI ULCI

0.0000	0.0220	0.0007	31.6096	0.0000	0.0207	0.0234
1.0000	0.0066	0.0001	57.5278	0.0000	0.0064	0.0068

Data for visualizing the conditional effect of the focal predictor: eff gender loginc

-0.4509	0.0000	5.3775
-0.4215	0.0000	5.3781
-0.3087	0.0000	5.3806
-0.4509	1.0000	5.4195
-0.4215	1.0000	5.4197
-0.3087	1.0000	5.4204

** Bootstrapping progress:
|>>| 100%

**************** DIRECT AND INDIRECT EFFECTS OF X ON Y ****************

Direct effect of X on Y:
effect se t p LLCI ULCI
0.5711 0.0010 574.8678 0.0000 0.5691 0.5730

Conditional indirect effects of X on Y:

Indirect Effect:
logtran -> eff -> loginc

bage gender Effect BootSE BootLLCI BootULCI

3.9315	0.0000	-0.0163	0.0028	-0.0236	-0.0124
3.9315	1.0000	-0.0049	0.0010	-0.0077	-0.0035
8.6356	0.0000	-0.0191	0.0033	-0.0274	-0.0148
8.6356	1.0000	-0.0057	0.0013	-0.0091	-0.0040
17.4932	0.0000	-0.0243	0.0042	-0.0351	-0.0186
17.4932 1.0000 -0.0073			0.0017 -0.0120 -0.0049		

Index of moderated moderated mediation:
Index BootSE BootLLCI BootULCI 0.0004 0.0001 0.0002 0.0007

Indices of conditional moderated mediation by W:
gender Index BootSE BootLLCI BootULCI 0.0000 -0.0006 0.0001 -0.0009 -0.0004
1.0000 -0.0002 0.0001 -0.0003 -0.0001

******************** ANALYSIS NOTES AND ERRORS ************************