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INCOME-EXPENDITURE LEVEL OF THE CONSTRUCTION WORKERS: A CASE STUDY OF URBAN HOUSING SECTOR OF ASSAM

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ABSTRACT

In the thriving economy of Assam, with the construction of a large number of towering buildings, its urban areas have experienced a spectacular growth of housing colony. In the midst of such prosperity, a section of people working in the informal housing sector termed as Building Construction Workers (BCWs) are victims of many adverse circumstances leading them a poor quality of life. Among many, poor level of income mainly due to the discontinuity of works and receipt of less than the market prevailing wage rates is one of root causes of it. However, in combination of their limited income, their unreasonable expenditure habits and large family sizes lead a poor quality of life to them. So, the study aims at examining the income-expenditure gap, and its association with the savings and borrowings among BCWs. Using analytical research method, the present study has been conducted in 90 construction sites selected purposively in 10 sample towns of different categories in the Brahmaputra valley of the state. In total 450 workers have been randomly selected taking at least 5 workers from each sample site, and 30 contractors/ builders of first class category taking one from each 3 (three) construction sites. On average, the annual income of a BCW is higher than the per capita income of the state. But majority of them have experienced a negative income-expenditure gap mainly due to their chronic habits of spending much on intoxicants and social ceremonies, which, in turn, push them to take loan and remain indebted for long time.

KEYWORDS

building construction workers, savings and urban housing sector.

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INTRODUCTION

Urban areas¹ in Assam have been experiencing a spectacular growth of housing colony owing to construction of towering buildings, showing the signs of prosperity of a thriving economy. Urban areas of the state are in need of constructing new commercial and residential complexes to accommodate fast growing population with increasing digitalized urban facilities such as having social, transport and utility infrastructure, as elsewhere in developed countries. Hence, building of multistoried houses has emerged as an important construction sector, termed as housing sector with a large scale employment of casual labourers to construct such housing complexes with their sweating labour. It is a labour intensive sector and important indicative of the development of an economy (Zaiats & Zaiats, 2018). In the midst of such prosperity, the urban areas show case some issues such as the penury of construction workers (BCWs)² in such housing sector, and their social and economic insecurity.

Construction sector is the third largest employment area in India³. This sector has provided employment opportunity to 17.5 million workers of the country in 1999-2000, which has increased to 26.1 million in 2005-06, to 44.2 million in 2009-10 and it has further increased to 46 million in 2010-11. The share of construction sector to the total employment in the country has gradually increased from 4.4% in 1999-2000 to 5.7% in 2005-06 and to 9.6% in 2009-10³. In India by 2022, this sector along with the real estate sector is expected to emerge as the largest employment area providing employment opportunities to over 75 million people in the country and contributing over 15% to the GDP of the country (Choudhury, 2016). The share of this sector to the GDP of the country has also constantly increased from 6.5% in 1999-2000 to 7.7% in 2005-06 and to 7.9% in 2009-10⁴. Again, this sector has contributed a sizeable amount of ₹878,110 cores with 7.81% (at 2011-12 prices) to the GVA of the country in 2016-17, which has increased to |1,011,322 (7.90% of the GVA of the country) in 2018-19⁵.

Construction works in the housing sector of Assam as that of other states of India is run privately at a large scale. The workers in such informal sector are, however, vulnerable to a number of adverse circumstances such as hazardous nature of works, adverse working conditions, unsafe working environment and a little social security benefits (Kumar M. D., 2013, Pp.43-52) (Society, 2002, p.42) (Ponnuswamy B., 2013, pp.228-246). The employment of labourers in such sector is temporary and insecure. Contractual or Casual nature of the employment imposes not only the problem of job insecurity, but also income insecurity to them. The hire and fire principle governs the entire employment philosophy of construction workers in the housing sector. Such workers barely receive one-day notice of job termination. The minimum wage rate is too not regularly paid. In such private sector, most of the workers employed on casual basis are deprived of continuing their works due to the seasonal slack in demand for works and job termination by the contractors/ builders in many cases. The market prevailing wage rate is not paid to them in many cases. Hence, their level of income remains at a poor level. Moreover, their expenditure habits are also not reasonable; most of them have the chronic habits of spending more on intoxicants, social ceremonies and entertainment. In spite of continuous efforts of the government for containing the deplorable condition of construction labourers in general, and labourers in the private housing sector of the state in particular, their woes and problems have remained a challenging area due to non-availability of reliable data on this aspect.

¹ In 1971 Census had defined (i) the places with a Municipality, Corporation or Cantonment board or Notified Town Area committee as urban area, (ii) the places satisfying the criteria of: (a) a minimum population of 5000, (b) at least 75% population are non-agricultural male workers (c) density of population is at least 400 per sq.km as Census towns.

² Building Construction workers (BCWs) refer those are employed either on casual or contract basis under contractor/builder for construction or repair of building works. It does not include any person employed in managerial or administrative works of the establishments. Thus, the BCWs comprise mainly the workers engaged in construction works of building such as excavators, stone crushers, brick masons and their helpers, tiles fitter, carpenter, wall painter and electrician. Self-employed building construction workers are not covered in the study.

³ Census report of India, 2001.

STATEMENT OF THE PROBLEM

The unreasonable expenditure habits of the workers in combination with their limited income level and large size of their families results in a negative income-expenditure gap for majority of them, which leads a poor quality of life to them. For promoting a better living among this section of sweating labourers, a thorough examination of their income-expenditure level and the association with the income-expenditure gap with savings and borrowing has been an academic importance to suggest policymaking and for planned urban development.

IMPORTANCE OF THE STUDY

The research study bears importance on the following grounds-

1. For social activists, for understanding of the income-expenditure level of CWs in urban housing sector to undertake necessary corrective societal measure, it is seemed very important. Income and expenditure level reflects the living standard and life style of a section of people in a society to a large extent.
2. For policy makers and planners, it requires to have information and data on the income and expenditure level of the construction workers (CWs) in the housing sector reviewing the wage policy.

REVIEW OF LITERATURE

On various aspects of construction workers in the housing sectors in India, some literature is found and these have been reviewed below.

In developing countries, employment relationships in the informal construction sector has been found to be diverse and complex due to expansion of self-employment, casual employment of labour, and outsourcing of labour by the recruiting intermediaries. All these are strong hindrance against unionism among the workers to raise their employment level. (Wells, J ; Jason, A., 2010, pp.107-124).

Ponnan & Iyappan have analyzed employment, uncertainty, health problems and unsafe working environment and suggesting government intervention (K Ponnan & T Iyappan, 2016, p.1106). M, Dillep Kumar examined the reasons of deplorable conditions of the construction workers in Pune city of Maharashtra and he finds no mercy of contractors for the labour class. Existing labour laws are not favouring the construction workers. (Kumar M. D., 2013, pp.43-52). Deshkal society highlights the deplorable working and living conditions of the construction workers in the housing sector (Society, 2002, p.42). Ponnuswamy studying the working conditions of the CWs in Chennai city has suggested to bring all the construction workers under the state welfare board, organise periodical training camps at the working sites for the workers and to adopt safety measures while working (Ponnuswamy B., 2013, pp.228-246). G.Tiwary & et.al have found the construction as the victims of adverse working condition in West-Bengal. (G Tiwary & et.al, 2013, pp.66-71).

Researcher R. Rajarathinam in Tamil Nadu finds low wages paid to construction workers owing to their poor bargaining capacity and migratory nature. Their acute indebtedness has made their lives knotty. (Rajarathinam R., 2018, p.). Silvia and Moronha have found poor income of the migrant workers in Goa and gender discrimination in wages (Silvia, M ; Moronha, M, 1998, pp.766-772). Mohammad Sarwar Mir and Hamid et.al in Kashmir and T. Jayakrishnan and et.al in Kerala have found prevalence of various occupational health diseases between two groups of workers, viz: construction workers and civil workers (Mir, Mohammad Sarwar; Hamid, Ruksana; Azhar, Mohammad; Mustafa malik, Ghulam, 2018, p.308) and (Jayakrishnan, Thomas, Rao, & George, 2013, p.227-229). In the northeastern region (Tripura) Guha Thakurta has found wage rigidity in the cases of road and building construction workers against the relative price inflation and higher cost of living (Thakurta S. N., 1971, pp.2211-2215).

Chitra finds in Tiruchirappalli area a significant association between the type of the house of women workers and their social, occupational and family problems (Chitra, 2016, pp.46-52). In Dhaka city, Nahid Sultana and et.al have found that the construction workers are victims of musculo-skeletal injuries, body pain and respiratory disorders (Sultana, Nahid; Ferdousi, J; Shaidullah, Md, 2014, pp.658-661). Kalpana Devi and U V Kiran have found gender discrimination and sexual harassment of female workers at work place of construction industry (Devi, K; Kiran, U V., 2013, pp.27-30). Aruna Solanki and K. Zankharia have found significant wage differentials among the migrant workers in Surat city in terms of gender, and types of workers (Solanki, A; Zankharia, Kirit., 2014, pp.21-30).

RESEARCH GAP

All such earlier studies have avoided the inquiry into the income-expenditure level of building construction workers. Secondly, this aspect of the construction workers has not so far been studied in the state. So, this study outlining income-expenditure of BCWs of the state would be an addition to the existing literature. It has also been expected that the findings of this study would help to suggest policy measures in lessening the harsh plight of the BCWs in the state and improve their quality of life.

OBJECTIVES OF THE STUDY

To examine the income-expenditure level of construction workers in the urban housing sector of the state and their income-expenditure gap.

HYPOTHESIS USED

1. Difference in income and expenditure level between Helpers and Masons is not significant.
2. There is no significant association between the income-expenditure gap and savings among the workers.
3. There is no significant association between the income-expenditure gap and borrowings among the workers.

RESEARCH METHODOLOGY

An analytical research method has been used in this study. The present study has been conducted in the urban areas in the Brahmaputra valley of the state that covers 87.81 per cent (1106.27 sq.km) urban areas, out of 1259.88 sq.km total urban areas of the state. Again, the Brahmaputra valley covers 81 per cent (174 nos.) of the total number of towns out of 214 nos in the state (Table-1).

TABLE 1: THE PROFILE OF ASSAM AND THE BRAHMAPUTRA VALLEY AS PER CENSUS, 2011

Sl.No	Particulars as per 2011,census	Assam	Brahmaputra Valley
i.	Total Geographical Area (sq.km)	78438 sq.km	70634 sq.km
ii.	Total Urban Geographical Area (sq.km)	1259.88 sq.km	1106.27 sq.km
iii.	Total population	31196272	26410562
iv.	Total Urban population	4388756	3739997
v.	Total number of Urban areas	214 nos	174nos

Sources: i. Economic Survey, Assam, 2012-13, ii. Census of India, 2001, 2011, iii. Office of the Register General of India, Guwahati (Compiled by the author). In 1971 census report, the urban areas of the state had been stratified into six categories based on the size of population (Table-2). Out of 214 nos. of urban areas in the state, the Brahmaputra valley contains 81.31 per cent (174 nos) towns/ urban areas as shown in table-2. Out of 174 nos. urban areas in the Brahmaputra valley, 5% of each category of town has been selected, which gives a total of 10 sample towns for the study as shown in the table-2. Capital city of the state- Guwahati Municipality Corporation (out of 3 nos. of Class-I towns in the Brahmaputra valley) has been selected as it covers an area of 19.52 % (216 square kms) of the total urban geographical area in the Brahmaputra valley (1106.27 sq.km). Secondly, it comprises of 60 municipal wards, which encompass 25.6% (957,352 nos.) populations of the total urban population in the Brahmaputra valley. Jorhat Municipal Board (one fast growing class-II town) has been selected, as it comprises of 19 wards with a population size of 72,380 nos (Census report, 2011), encompassed in a geographical area of 9.20sq.kms. Selection of other categories of towns in the Brahmaputra Valley has been done on random basis as shown in table-2.

TABLE 2: SAMPLE TOWNS IN THE BRAHMAPUTRA VALLEY (Total=10nos)

Category of Town	Total Towns in B. Valley	No. of towns selected@5% of each	Selected sample towns
Class-I	03	0.15 =01	Guwahati Municipality Corporation(GMC)
Class-II		0.55 =01	Jorhat MB
Class-III	25	1.25 =01	Golaghat MB
Class-IV	36	1.8 =02	BokakhatTC&Titabor T C
Class-V	77	3.85 =04	AmguriTC, Chabua TC, Dokmoka TC(KarbiAnlong) &Teok TC
Class-VI	22	1.1 =01	Kamalabari (Majuli)
Total	174 nos	10 nos	

Giving relatively more weight to higher category of towns, in total 90 sample construction sites have been selected disproportionately from 10 nos sample towns of different categories as shown in table-3. For the infinite population size of construction workers in the housing sector of the state, Cochran's formula has been applied that gives required sample size of 384nos (with $p=0.5$, $q=0.5$, $e=0.05$ and $z=1.96$). Considering representative sample size, in total 450 workers has been randomly selected taking equal number of BCWs (5nos) from each selected sample site for avoiding bias and in order to render the samples representativeness. In addition, from each 3 (three) construction sites, one contractor/ builder has been randomly selected numbering $90 \times 1/3 = 30$ samples for interviewing (table-3).

TABLE 3: NOS OF SAMPLE SITES, BCWs AND CONTRACTORS/BUILDERS SELECTED FOR THE STUDY

Category of towns	Sample Towns selected for field visit	Construction Sites Surveyed	CWs interviewed@ 5 nos from each site	Contractors/ Builders@ 1/3 from each 3 sites
Class-I	GMC	18	90	06
Class-II	Jorhat MB	15	75	05
Class-III	Golaghat MB	12	60	04
Class-IV	Bokakhat TC	09	45	03
	Titabor TC	09	45	03
Class-V	Amguri TC	06	30	02
	Chabua TC	06	30	02
	Dokmoka TC	06	30	02
	Teok TC	06	30	02
Class-VI	Kamalabari CT	03	15	01
Total	10nos	90 nos	450 nos	30 nos

DATA SOURCES & ANALYTICAL TOOLS

Primary data have been collected mainly from the BCWs currently involved in building construction works and the contractors/builders of the sample construction sites. The secondary data have been collected from the following sources: i) Office of the Registrar General of India, Guwahati; ii) NSSO, Guwahati; iii) Directorate of Economics and Statistics, Govt. of Assam; iv) District Offices of the Directorate of Economics and statistics; v) Other govt. publications, such as Primary census abstracts of Assam, and Economic surveys of Assam.

Independent Sample T test have been done for examining the significance of difference for income and expenditure level between Helpers and Masons. Using Chi-square test, the association between the income-expenditure gap and savings, and borrowings of the building construction workers has been examined.

RESULTS & DISCUSSION

INCOME LEVEL OF CONSTRUCTION WORKERS IN URBAN HOUSING SECTOR

The monthly income of a construction worker in the housing sector of the state has been computed⁴ as follows:

Monthly Income = Wage Rate x (Number of days worked in a month).

In the absence of the transfer income and employee's benefits in the private housing sector of the state, the income earned in a month by a worker in the housing sector is equal to the amount of wages earned in the days of working in a month.

Again, the helpers and masons have been re-categorized into the camper and commuter for analyzing income difference between them.

A construction worker on an average has earned ₹ 7629/- per month and hence, ₹91,548/- per year which is higher than the per capita income of the state (₹74,180) and is lower than the all India average of ₹ 1, 03,870/- in 2018⁵. The monthly income of a helper on an average is found to be ₹ 6039/- which is much lower than the average monthly income of a mason (₹ 10248/-)(table-4).

Estimating the monthly income of the commuters and campers separately within the unskilled group, it has been found that on an average a camper earns more (₹6550/- per month) than that of a commuter (₹5487/- per month). Within the skilled group (mason), a camper on an average has earned ₹10390/- per month which is higher than that of a commuter (₹9930/- per month) (table-4). The root causes behind such difference are as follows-

A camper works for more days in a week than that of a commuter, as the former resides in the workplace and regularly provide his/her services to the employers. Secondly, a camper serve for a longer hour of work for a slightly higher wage rate in comparison to a commuter. Overtime working brings almost double income to the workers staying in the working site.

TABLE 4: INDEPENDENT SAMPLE T-TEST FOR INCOME LEVEL OF CWs IN URBAN HOUSING SECTOR

Sl.No	Difference between	Average Monthly Income	T-Test Value	Df	P-Value (2-tailed)	Results
i)	Helper	6039	-24.873	204.555	.000	Significant
	Mason	10248				
ii)	Commuter Helper	5487	-12.797	270.764	.000	Significant
	Camper Helper	6550				
iii)	Commuter Mason	9930	-1.487	113.360	.140	Not significant
	Camper Mason	10390				

The T- test values with its degrees of freedom and corresponding p-values as shown in table-4 are indicative of the fact that there exists significant difference in monthly income between Mason and Helper, between Commuter and Camper in the unskilled category at 5 percent level of significance. However, the monthly income difference between Commuter and Camper of skilled category is not significant.

⁴ Usually, the total income of a worker in an establishment is computed by using following methods:

Earnings = wage rate x the number of the time units worked.

Total compensation=Earnings + Employee's benefits.

Total Income= Total Compensation+ Unearned Income (Transfer Income).

⁵(i) Government of Assam, Directorate of Economics and Statistics. (ii) Economic survey of Assam, 2018, (iii) Finance Department, Government of Assam.

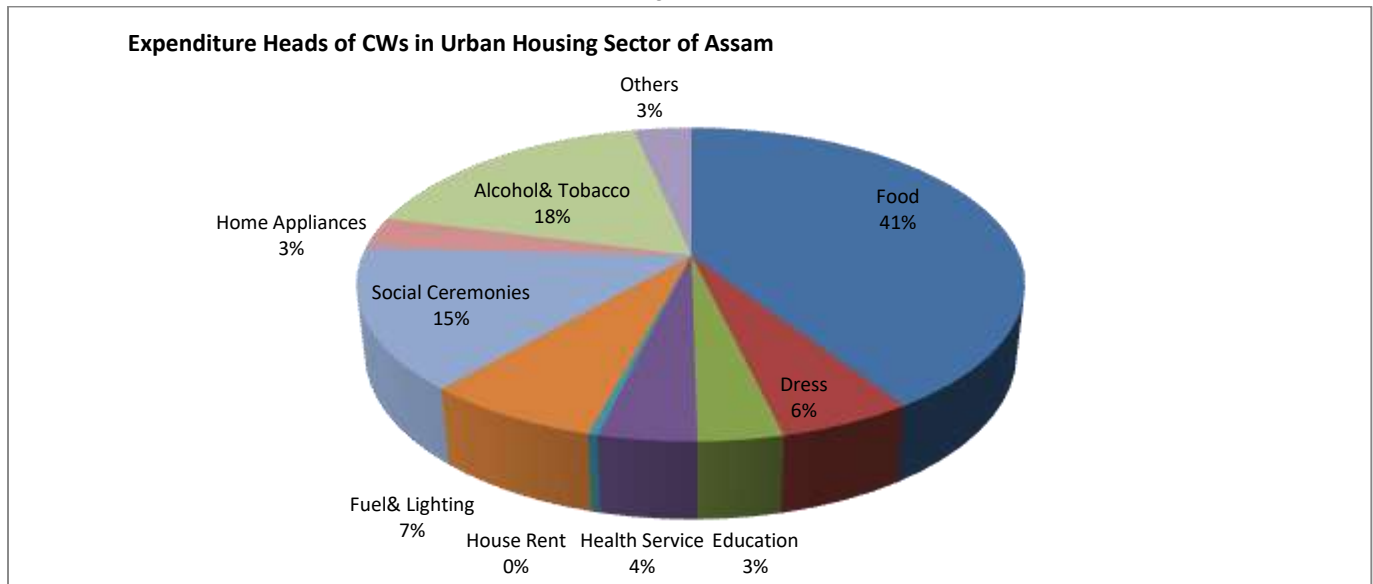
EXPENDITURE LEVEL OF CONSTRUCTION WORKERS

A construction worker as being a low income earner spends major portion of his/her income (41%) on food items. A sizable portion of income (18%) has been spent on intoxicants such as alcohol and tobacco (table-5). The root causes behind the use of intoxicants as reported by most of the CWs are as follows-

- i) For relaxing the fatigue arising out hard labour, they take intoxicants regularly.
- ii) Many have used tobacco /alcohol as recreational items after finishing their works.
- iii) Some use alcohol for relaxing family tension and other social clash/obligation.

Next to the intoxicants, on an average, about 15% of their income is spent on social ceremonies and entertainment resulting in a low saving. On health care on an average, only 4% of the total income (₹271.5) is spent. To the education of children, a low priority is given as most of the construction workers send their children to government schools which provide cost free education or at a nominal charge. Secondly, most of the CWs do not send their children to the school and for higher study. Barely 3% of the monthly income is allocated by the construction workers for the education of their children. Again, a negligible amount (₹26) is spent on house rent(table-5). The cause is a small number of migrant workers (2.67%) use to reside in the rented hutments in the urban areas, contrary to the majority of them take the shelter in the working place either free of cost or at a low cost.

CHART 1



Source: Drawn on the basis of data from table-5

TABLE 5: HEADS OF EXPENDITURE OF CONSTRUCTION WORKERS IN URBAN HOUSING SECTOR

Sl. No	Heads of Expenditure	Amount Spent(Rs)	Percentage to total
i	Food Items	2780.5	41
ii)	Dress	373	6
iii)	Education	235	3
iv)	Health Services	271.5	4
v)	House Rent	26	0
vi)	Fuel& Lighting	487.5	7
vii)	Social Ceremonies	989	15
Viii)	Home Appliances	224	3
ix)	Alcohol& Tobacco	1197.5	18
x)	Others	226	3
Total		6810	100

Source: Field survey data in 90 sample construction sites.

TABLE 6: T- TEST FOR THE DIFFERENCE IN MONTHLY EXPENDITURE BETWEEN HELPER AND MASON

Sl. No	Heads of Expenditure	Mean Expenditure		T-test for equality of Means			
		Helper	Mason	T-Value	Df	P-value	Results
i.	Food Items	2463	3098	-11.711	263.340	.000	Significant
ii.	Dress	375	371	-1.580	371.618	.115	Not Significant
iii.	Education	212	258	-1.020	311.420	.309	Not Significant
iv.	Health Services	269	274	-.567	387.037	.571	Not Significant
v.	Fuel& Lighting	284	691	-6.828	337.376	.000	Significant
vi.	Social Ceremonies	940	1038	-2.939	367.229	.003	Significant
vii.	Home Appliances	219	229	-1.134	365.046	.258	Not Significant
viii.	Alcohol& Tobacco	1130	1265	-2.911	367.240	.004	Significant

Source: Field survey data in 90 sample construction sites.

The T- test values with its degrees of freedom and corresponding p-values as shown in table-6 are indicative of the fact that the differences between Mason and Helper in the monthly expenditure on food items, fuel & lighting, social ceremonies and alcohol & tobacco are significant. However, the differences in the monthly expenditure of the Mason and the Helper, on the items such as the dress, education, health services and home appliances are not significant.

INCOME-EXPENDITURE GAP, SAVINGS AND BORROWINGS

On average, the monthly income of the BCWs (₹7629) exceeds their monthly expenditure (₹6810) resulting a positive income-expenditure gap of ₹819 for them. For the helpers, the average monthly income (₹6039) is less than their average monthly expenditure (₹6144) by ₹105. For commuter helpers, the negative income-expenditure gap is found to be much high (-₹414). Of course, the average monthly income of the helpers residing in the construction camps termed as camper helper (₹6550) is greater than their average monthly expenditure (₹6387), and hence, they are able to get a positive income-expenditure gap of ₹163(table-7).

In contrast, the average monthly income (₹10248) of the masons outweighing their average monthly expenditure (₹7476) results in a sizeable positive income-expenditure gap of ₹2772, which may contribute to their savings. The positive income-expenditure gap for commuter mason (₹2909) is found to be higher than that of for camper mason (₹2459) (table-7).

TABLE 7: MONTHLY INCOME-EXPENDITURE GAP OF THE CWs ON AVERAGE

SL. No	Workers	Average Income(in₹)	Average Expenditure(in₹)	Income-expenditure gap on average (in₹)
i	CW	7629	6810	+819
ii.	Helper	6039	6144	-105
iii.	Mason	10248	7476	+2772
iv.	Commuter Helper	5487	5901	-414
v.	Camper Helper	6550	6387	+163
vi.	Commuter Mason	9930	7021	+2909
vii	Camper Mason	10390	7931	+2459

Source: Field survey data collected from 90 sample construction sites.

For the largest majority of the workers (63.56%), the monthly expenditure exceeds their monthly income resulting in a negative income-expenditure gap. In contrast, amongst a small number of workers (36.44%), the positive income-expenditure gap has been found to exist (table-9).

Again, only 14.88% of the workers are found maintaining their saving accounts. For the helpers, it is 12.14% and in the case of masons, it is 17.06%. Low and limited savings of the construction workers in the housing sector have debarred them to live a decent life and thus, suffer from capability deprivation such as food insecurity, poor health attainment and poor or no education to children. The unnecessary expenditure on intoxicants (18% by a helper and 17% by a mason on an average) affects them in reducing health status and making them economically much poorer. It seems that poverty is, if not fully, partly a consequence of their own fault.

As regards the borrowings among the workers, as much as 38.89% of the workers have borrowed money from several informal sources such as relatives, friends and money lenders at higher interest rates of 10-15% per month in order to overcome the financial needs. For the helpers, it is found to be 41% and for the masons, it is 35%. For meeting the expenditure on social ceremonies such as marriage and funeral functions, and for medical treatment at the time of major injury and disease, they have to take loan and remain indebted for long time.

The positive income-expenditure gap is viewed as contributing to savings, and the negative income-expenditure gap leads to borrowings and indebtedness. For the association between the income-expenditure gap and savings, the chi-square value is found to be 137.281 with its corresponding p-value 0.00 which is less than 0.05(table-8). This rejects the null hypothesis. This indicates that the association between the income-expenditure gap and savings is significant. The chi-square value for the association between the income-expenditure gap and borrowing is found to be 1.855 with 1 degree of freedom and the corresponding p-value is 0.173, which is more than 0.05(table-8). So, the null hypothesis is accepted. This indicates that the association between the income-expenditure gap and borrowing is not significant.

TABLE 8: ASSOCIATION OF INCOME-EXPENDITURE GAP WITH SAVINGS AND BORROWINGS

	Income-Expenditure Gap		Chi-square test value	df	P-value
	Positive	Negative			
Saving	67	0	137.281	1	0.000
No Saving	97	286			
Borrowing	57	118	1.855	1	0.173
No Borrowing	107	168			

Source: Computed through SPSS

FINDINGS OF THE STUDY

1. The annual average income of a construction worker (12 x ₹7629/- per month= ₹91,548) has been found to be higher than the per capita income of the state (₹74,180/-), but is lower than the all India average (₹1, 03,870/-).
2. The monthly income of a helper on an average (₹ 6039/-) is much lower than the average monthly income of a mason (₹ 10248/-). Again, in unskilled group, on an average, a camper earns more (₹6550/- per month) than that of a commuter (₹5487/- per month). Within the skilled group (mason), the monthly income of a camper on an average (₹10390/-) is higher than that of a commuter (₹9930/-).
3. A construction worker spends major portion of his/her limited monthly income (41%) on food items. Then, a sizable portion of income has been spent on intoxicants (18%) and on social ceremonies and entertainment (15%). Health care (4%) and education (3%) are of their lowest priority.
4. Though, on average, the monthly income of a BCW (₹7629) is sufficient to cover their monthly expenditure (₹6810), majority of the workers (63.56%) have a negative income-expenditure gap. In contrast, amongst a small number of workers (36.44%), the positive income-expenditure gap has been found to exist.
5. Against only 14.88% of the workers maintaining their saving accounts, as much as 38.89% of the workers are found to borrow money from several informal sources at higher interest rates.
6. The association between the income-expenditure gap and savings for the workers in sample areas is found to be significant. But the association between the income-expenditure gap and borrowing is not significant.

SUGGESTIONS FOR POLICY RECOMMENDATION

1. Government requires to implement minimum wage rate policy for the construction workers, with special focus on the stipulated 8(eight) hours of work per day as in Factory Act, 1948.
2. Employers may help in issuing BPL card/ Aadhaar Card on behalf of the workers and thereby help them in deriving due social welfare benefits under various welfare schemes of the government.
3. Workers should avoid unnecessary expenditure on intoxicants and entertainment, and allocate their limited income properly on the important expenditure heads of the family. For this, regular monitoring of the workers by Unions' leaders, NGOs and social activists is necessary.
4. Workers need to maintain their family size within a limit and hence, they may be asked to follow the population control policy

CONCLUSION

Although on average, the monthly income of a BCW is higher than the per capita income of the state, and for many of them, it is sufficient to cover their monthly expenditure, this is only for maintaining a subsistence living as reflected by the limited amount spent on their various expenditure heads. With the limited income, they, in practice, could not send their children for higher studies; take proper treatment of their diseases in time, furnish comfortable home appliance for a quality life.

One major default for this section of workforce is their chronic habits of spending more on unnecessary items such as intoxicants, and social ceremonies and entertainment. Second one is large size of their families which is often difficult to manage with the limited income.

LIMITATIONS OF THE STUDY

This work has been confined to analyze the income and expenditure level of CWs in the urban housing sector of the state (Assam). It thus, excludes the rural areas of the state. The study is based on the sample data collection.

SCOPE FOR FUTURE RESEARCH

1. A comparative study of the construction workers in housing sector and other informal workers of the state may be undertaken for a better understanding of their income-expenditure level and suggesting solution for their economic improvement.
2. After globalization, the increased trend of using capital and machinery equipment's has emerged in the building construction sector. So, a study may be pursued about the impact of technological development on the employment of the construction workforce.

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AN EVALUATION OF THE FACTORS INFLUENCING ACCESS TO FINANCE AMONG SMALL TO MEDIUM ENTERPRISES (SMEs) IN THE MANZINI REGION, IN ESWATINI

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ABSTRACT

In most economies in the world, SMEs play a huge role in providing employment and the stability of the economy as a whole. In fact, SMEs contribute to a greater percentage of employment in most world economies. With that being said, SMEs still have difficulties in their day to day running due to a number of factors. The most talked about of these factors are the challenges SMEs face in accessing finance which is discussed in this study. In as far as accessing finance is concerned; the challenges SMEs face include providing collateral, information asymmetry, informal nature of the business and many more. The impact of access to finance on operations and performance of SMEs are also investigated. The research places reliance on survey data through the use of structured questionnaires administered to 394 SMEs in the Manzini Region to extract data from the sample representative of the larger population of interest. The conclusions indicate that access to finance is a significant challenge to SMEs and the critical factors that influence its access were found to be a lack of collateral as well as stringent loan requirements. These findings imply the need for financial institutions to reassess their role in aiding SMEs to obtain the needed finance to improve operation and performance. It is also recommended that SMEs should embark on increasing their financial literacy and business management skills so that obtaining finance becomes not only an essential requirement, but one that is equally met.

KEYWORDS

Manzini region, SMEs: small to medium enterprises, financial literacy.

JEL CODES

H32, J18, L53, O17, G21.

INTRODUCTION

The biggest and most successful businesses across the world all began from smallest of working spaces, with little to no technology, turned into a small enterprise before it grew to a corporate giant and world leader (Harding, 2018). The oldest establishments of SMEs in more advanced countries were mere cottage industries which evolved into industrial complexes and functions of high technology. At the moment, SMEs are mostly responsible for the output produced in many countries and they are playing an important role as a job creator. Small and micro-enterprises account for over 90% of all market entities in China, over 80% of nationwide employment, more than 70% of patents, over 60% of gross domestic product (GDP) and more than 50% of tax revenues (Howe, 2018). Generally, SMEs are known to be low scale businesses that employ a low number of people (fewer than 250 people), have a low turnover and have a small market segment (Hall, 2018). Every country or economy has its own specific definition of SMEs. Worth noting is that there is no generally accepted description or definition for SMEs. SMEs are of paramount importance to each and every economy of the respective country in which they are established. In South Africa, it is estimated that SMEs make up 90% of formal businesses, provide employment to about 60% of the labour force and contribute roughly 34% of GDP (Susman, 2017). The Organization for Economic Co-operation and Development (OECD) estimates that small and medium enterprises account for 90% of firms and employ 63% of the workforce in the world (Munro, 2013). SMEs form the foundation of both national development and economic growth, creating more and more jobs whilst also aiding the government in the generation of funds through payment of taxes and other levies. In Nigeria, SMEs contribute 48% of national GDP, account for 96% of businesses and 84% of employment (PricewaterhouseCoopers, 2017). According to the Nigeria Bureau of Statistics 2017, SMEs in Nigeria have contributed about 48% of the national GDP in the last five years. With a total number of about 17.4 million, they account for about 50% of industrial jobs and nearly 90% of the manufacturing sector, in terms of number of enterprises (PricewaterhouseCoopers, 2017). SMEs are now strategic and essential for accelerating economic growth in Nigeria. SMEs constitute about 90 per cent of all the businesses in Nigeria, creating more than 80 per cent of employment in the region (Okogba, 2018).

REVIEW OF LITERATURE

Parker et al (1995) as cited in (Kamweru, 2011) found that the development of small and medium sized enterprises has often been graded as a "missing link" in development strategies of African countries, as several import substitution policies have favoured large corporations at the expense of SMEs. It is however, somewhat difficult to assess the weight of SMEs in the developing world's economies. This is not only due to lack of statistical data and research on industrial structures in developing countries, but due to problems associated with inclusion of the informal sector. The Kingdom of Eswatini as a country is no exception as SMEs play

a major role in job creation, poverty, alleviation and economic growth. Joubert (2016) states that in Eswatini, SMEs provide jobs and create an environment that helps foster the entrepreneurial ability of quite a number of women.

MAIN CHALLENGES FACED BY SMEs

(a) Accessing Finance

Despite the importance of SMEs for job creation and production, most of the SME issues points to the fact that these firms face higher barriers to external financing than large firms, which limits their growth and development (Kihimbo & Ayako, 2012). The difficulty that SMEs endow in raising finance to start-up or finance growth of the business cannot be overlooked. These include;

(b) Collateral Requirements

It is well recognized all over the world that banks are the main external providers of capital for SMEs sector in both developing and developed countries (Vera & Onji, 2010). Most of start-ups rely on loans from commercial banks or other financial institutions, backed by a collateral or superior credit score (Park, 2006). Collateral refers to the extent to which assets are committed by borrowers to a lender as security in exchange for a loan (Gitman, 2003). The Dhaka Chamber of Commerce and Industries (DCCI) in its working paper on economic policy, outlined that the demand side (lack of collateral and business experience) and the supply side (terms and conditions of banks) do not match up and therefore becomes a problem in getting access to financing (Dhaka Chambers of Commerce and Industries, 2004). The financial support they get is limited and some do not have the collateral to back their request for a loan. This is because of high risk and for not having adequate resources to provide as collateral (Kihimbo & Ayako, 2012)

(c) Loan Provider's Desire to be involved in Day to Day Activities

The acts of entrepreneurs; obtaining loans and contributions from friends and close relatives are an easily accessible source of funds for starting a business, as highlighted by (Adalessossi, 2015). This source of finance is the cheapest and comes at no cost to the entrepreneur (Frimpong & Antwi, 2014). However, this source of funds has a potential danger as most friends and relatives find it difficult to stay as uninvolved creditors and investors. They usually want a vote on decisions concerning the activities of the business Kuriloff et al (1993) as cited in (Adalessossi, 2015). This may lead to poor decisions as they may not be well informed about the business and the environment it is operating in. In fear of disagreements in the running of the business, an entrepreneur may not be willing to accept the funding.

(d) Informal Nature of Business

SMEs face difficulties when it comes to obtaining financial support from commercial banks. This is due to their nature, since SMEs tend to be informal, small scale, have less publicly available information, operate in unfamiliar sectors, boast no good reputation, and have minimal assets to offer as collateral. Micro, small and medium enterprises tend to keep incomplete accounting records which repel potential financial suitors and investors. These factors are seen as risky to banks and the high risk discourages lending. Due to their small nature, SMEs find it too costly to list in capital markets; furthermore companies listed in stock exchange have to offer reasonable assurance to investors (Abraham, 2017).

(e) Information Asymmetry

Information asymmetry is that relevant information is not available and known to all players in the financial market (Agostino, 2008). The flow of information in the financial market is crucial for both the SMEs and financial providers (Falkene, 2001). In order for SMEs to identify potential suppliers of financial services, they require enough information to be available. The lack of information on both the SMEs and the financial institution makes it difficult for both parties to do business. SMEs need information to identify the right financier whereas the financial institutions require information to evaluate the potential risk associated with the SMEs that apply for financing and be informed on the market segment of the SMEs (Othieno, 2010). In this case, the borrowers know more about their business cases and the bankers may not know more about it.

On the other hand, it entails the lack of timely, accurate, quality, quantity and complete information regarding the ability of the borrower to meet the repayment obligations and access financial products from the banking institutions Bazibu (2005) as cited in (Osana & Hezron, 2016). A research by (Agostino, 2008), conducted on agricultural sector, revealed that the failure of the current African market is due to the number of the current agricultural credit problems. These problems are associated with the imperfection of the information from the SMEs. The failures of the market mostly occur due to the fact that it is costly to screen credit applicants. The imperfections of the information affect almost all small holder farmers (Agostino, 2008).

OVERCOMING CHALLENGES FACED BY SMEs

As a remedy for the interference of friends and relatives who provided a loan for starting up the business, the situation should be treated as strictly business. The agreement should be documented to protect both the parties involved and their relationship. A legal agreement should be drawn stating the amount borrowed, interest charged, what it will be used for, how it will be paid back and stating that the person will put the money into the business. It should also specify if the loan is secure or unsecure. If it is in the form of investment, the role that will be played by the investor in the business should be specified (Hecht, 2019).

The difficulty for SMEs to obtain loans from banks has not gone unnoticed. Policy makers and market participants have implemented and developed different initiatives to try broadening the access to funds. A credit information sharing mechanism to promote bank lending has been set up. Collateral laws have been improved and movable collateral registries are used to promote the use of movable assets as collateral. Developed countries' governments have created secondary exchanges for SMEs (Abraham, 2017).

To address the issue of information asymmetry, the SMEs need to strengthen their internal governance mechanism. They need to improve the standard of the financial system, which is to offer financial reports with high authenticity and enterprise information transparency (Cheng, 2014).

Staff members should be trained to be confident in experimenting and exploring what technology can do so that they integrate it with their business activities, as well as learning how the current new technology works (Warner, 2018). Before implementing a new technological feature in the business operations, employees should be involved in the process. Encourage those who have knowledge to voice out opinion. This will increase the chances of acceptance by the employees. Acceptance of the technology is a crucial stage of effective performance and accurate feedback. It should be introduced to team leaders first for steady adoption and they will also act as champions of the idea. Staff training on the technology is vital so that it can be used correctly for it to be more effective and increase efficiency. Lastly, give it enough time as implementation, adoptions and smooth running will not be easy (Mosha, 2018)

It has been said that small firms have difficulty in retaining important employees; there are actions that can be taken to remedy the situation. One of them is setting reasonable working hours requiring your team to work less might inspire your employees (Levin, 2019). This will result in happy employees who are likely to pledge their future to the business. Another could be offering competitive benefit packages. It is generally considered a must have and you can hardly expect to hire and retain quality employees unless you offer a benefit package that is at least at the same level as other firms, including a health insurance, life insurance, and perhaps even some sort of retirement savings plan (Paychex Inc, 2014). Small businesses invest time and technology, operations in order to grow but their success can be extremely difficult without a similar commitment to retaining the best employees (Paychex Inc, 2014)

IMPORTANCE OF THE STUDY

In Eswatini, the importance of the SME sector was highlighted by the Gemini report in 1991 although it took up until 1997 for the country to initiate its first steps in encouraging SMEs in the country. A research carried by United Nations Industrial Development Organization (UNIDO) was undertaken for a needs assessment. It was soon after followed by the European Development Fund (EDF) study which led to a series of recommendations on how to improve the sector. A fully-fledged SME unit within the Ministry of Enterprise and Employment was established (Dlamini, 2006).

Eswatini is a developing country and a greater part of its economy is dependent on SMEs as they provide employment and improve standards of living. Most people in the country reside in rural areas and depend on small activities to make ends meet. It is worth noting that SMEs are struggling to survive and those that are not struggling are not making enough profit to reinvest and turn into big corporates. About 80% of SMEs collapse in the first two years after their establishment and only 20% survive afterwards (Makhubu, 2017).

Therefore, it is paramount to study the SME sector and explore the challenges faced by these businesses, paying close attention to the factors that greatly influence the access of finance amongst SMEs in the Manzini Region. The study will critically analyse and bring into light the factors slowing down the development of SMEs and its findings will help stakeholders who are interested in the advancement of SMEs, to know exactly the issues they have to address.

PROBLEM STATEMENT

It is universal knowledge that SMEs are the pillars of every economy and Eswatini is no exception as they make a massive contribution into economic growth. Their success is not just the success of the owners but the whole country benefits as jobs are created, which leads to better living standards. Despite the efforts that the country has made to assist SMEs, such as the establishment of the Youth Enterprise Revolving Fund (YERF) and Small Enterprise Development Company (SEDCO), SMEs still find it difficult to raise enough finance to grow and self-sustain. It is vitally important for the Eswatini government and people living in Eswatini to better understand the areas that limit access to funding for SMEs to improve the sector.

It is with this view, therefore, that there needs to be an investigation and analysis of the factors that constrain the development of SMEs. This then leads us to the main objective of the study which is to evaluate the factors that influence the access of finance among SMEs whilst also looking at other significant factors that have a direct and substantial impact on their failure. The motivation is that if there can be a perfect identification of these limiting factors, improved, modern solutions and strategies can be formulated and implemented so that SMEs can reach their full potential.

AIM OF THE STUDY

The aim of the study is to evaluate the factors influencing access to finance amongst the SMEs in the Manzini Region, in Eswatini.

OBJECTIVES OF THE STUDY

1. To explore the factors influencing the SMEs ability to access capital.
2. To determine the impact of access to finance on SMEs operations and performance.
3. To establish other significant challenges that SMEs are facing.
4. To determine the effectiveness of government initiated programs towards improving access to finance.

RESEARCH METHODOLOGY

The research was done in the Kingdom of Eswatini in the Manzini Region. Manzini is in the center of Eswatini and has the most business in terms of SMEs. It is described as the heart of the economy (FinScope, 2017). Manzini region has 28 099 SMEs (Myeni & Manyatsi, 2017) and all the different types of SMEs are directly or indirectly affected by the challenges. Small enterprises from various industries such as agri-business, textile, transport, fast-food vendors, construction, manufacturing, both retail and wholesale- input from all types of SMEs were useful. For the purposes of this study, the researchers used a quantitative research design. The data was collected systematically by use of structured questionnaires administered to 394 SMEs in the Manzini Region. The areas of focus were Manzini City Centre, Fairview, Moneni, Mhlaleni, Kwaluseni and Matsapha industrial site. The quantitative research is based on the measurement of quantity or amount; it is applicable to phenomena that can be expressed in terms of quantity or amount (Kothari, 2013). It is applicable to a phenomenon that can be expressed in quantity. This method relies on collection and analysis of numerical data to describe, explain, predict or control a phenomenon of interest.

RESULTS AND DISCUSSION

(i) Factors Influencing SMEs Ability to Access Capital

Table 1.1 shows the responses from the sample population on the factors influencing SMEs' ability to access capital. The highest mean from the results above was on B1, a question investigating whether the respondents need external financing for their businesses. The mean of 3.7563 indicates that a high number of respondents agreed that they need external financing. The standard deviation of 1.18150 means that there is less variation from the answers on the respondents meaning that they all, more or less are of the same ideology. The results indicate that most of the SMEs need financial injection. However, most of the respondents have not taken a loan before to fund their businesses, hence the mean of 2.4746 and a standard deviation showing an insignificant variation in the responses. The second highest mean was 3.5381 which were responses from the sample when asked whether insufficient collateral prevented them from accessing capital. SMEs agreed that they could not get funding due to the fact that they could not provide enough collateral to the financial provider. Moreover, most respondents agreed that it was not easy to access a loan for their business, evident in the mean which is 2.5711, just below neutral, even those who have taken a loan before faced some difficulties such as the nature of their business.

	N	Minimum	Maximum	Mean	Std. Deviation
B1	394	1.00	5.00	3.7563	1.18150
B2	394	1.00	5.00	2.4746	1.20246
B3	394	1.00	5.00	2.5711	.88601
B4	394	1.00	5.00	2.9213	.89181
B5	394	1.00	5.00	2.8629	.77591
B6	394	1.00	5.00	2.9137	.81816
B7	394	1.00	5.00	3.5381	1.37769
B8	394	1.00	5.00	2.7665	.86274
B9	394	1.00	5.00	2.5558	.68661
B10	394	1.00	5.00	2.9289	.79440
Valid N (listwise)	394				

Source: Own, 2020

(ii) Impact of Access to Finance on SMEs Operations and Performance

A collective neutral response was a result of the fact that even though some respondents had started their businesses with a loan, the funds were not from a recognized financial institution but rather from close relatives and friends. According to (Fouad, 2013) in SMEs, financial resources are often limited. This often forces the company to select a solution, which appears to be cheap initially. However, the hidden costs will start to emerge during implementation. This sometimes causes the project to be abandoned or sends the company into further financial crisis. A mean of 2.6447 on C1, a statement that sought to obtain the degree to which SME owners had started their businesses using a loan was obtained. When the respondents were asked whether they were able to meet debts when they fall due, a high number indicated that they had difficulties in satisfying their obligations on debts. The mean of 3.5431 is evidence in this regard. However, the respondents did not have any problems with acquiring inventory which led to the neutral results of 2.5305 in C4, a statement which aimed at investigating whether the business was able to meet demand or not. They had inventory but could not really meet the type of items the customers desired. When the respondents were asked if funding prevented them from hiring more employees and limited the number of products offered by the business, in both questions the mean was high at 3.5838 and 3.9645 respectively. This indicates that if they had external finance they would hire more employees and increase the number of products they offered to the market.

TABLE 1.2: IMPACT OF ACCESS TO FINANCE ON SMES OPERATIONS AND PERFORMANCE

	N	Minimum	Maximum	Mean	Std. Deviation
C1	394	1.00	5.00	2.6447	1.20247
C2	394	1.00	5.00	3.5431	1.24766
C3	394	1.00	5.00	2.5305	1.38709
C4	394	1.00	5.00	2.7919	1.08533
C5	394	1.00	5.00	3.5838	1.47734
C6	394	1.00	5.00	3.9645	1.41736
Valid N (listwise)	394				

Source: Own, 2020

(iii) Effectiveness of Government Initiated Programs Towards SMEs

This section relates to the effectiveness of government initiated programs that are available to SMEs that seek to improve access to finance. Results obtained from respondents show that they have not had any assistance from government schemes or programs in trying to access finance. This is shown by the mean that ranges from 1.7563 to 2.0279 with regards to the series of questions respondents were asked to respond to. The standard deviation also ranges from 0.72108 to 1.06613, a clear indication that a variation in the responses throughout this section was very small. The respondents would also indicate that this close to non-existent assistance from government was primarily due to the fact that they do not have knowledge about any government schemes or programs that are readily available to them. For those respondents who went on to acknowledge that they do know about these programs, failure to meet requirements such as having a business plan were part of the reasons why they do not benefit from these programs. These results are in line with the conclusions from a study conducted by Darek Klonowski on Poland. He found that the Poland government SME support programs are poorly structured, fragmented and untargeted (Klonowski, 2010).

TABLE 1.3: EFFECTIVENESS OF GOVERNMENT INITIATED PROGRAMS TOWARDS SMEs

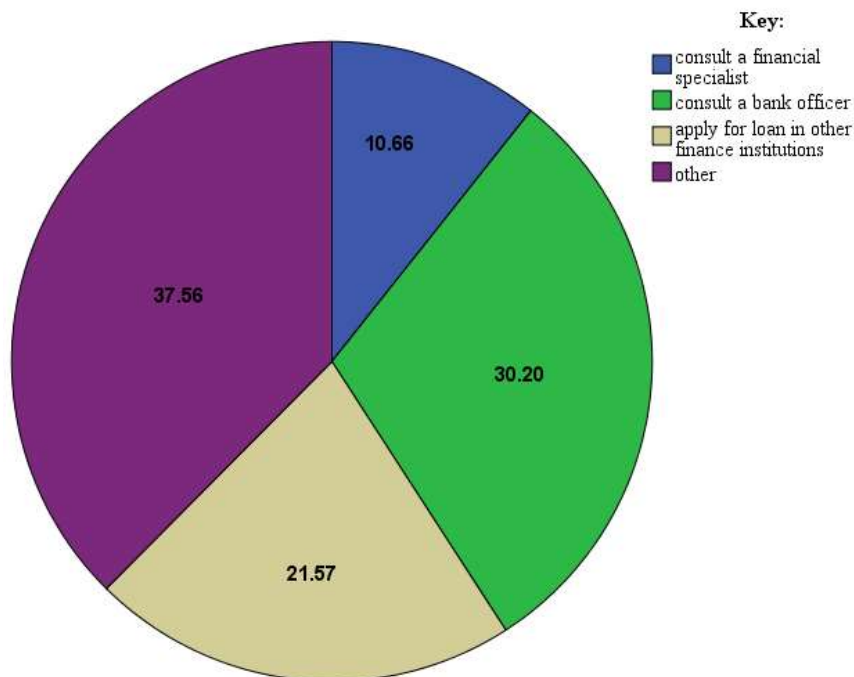
	N	Minimum	Maximum	Mean	Std. Deviation
D1	394	1.00	4.00	1.7766	.72108
D2	394	1.00	4.00	1.7868	.69913
D3	394	1.00	4.00	1.8350	.74526
D4	394	1.00	5.00	1.7970	.79399
D5	394	1.00	5.00	2.0279	1.06613
D6	394	1.00	5.00	1.7563	.72155
Valid N (listwise)	394				

Source: Own, 2020

(iv) Establish Other Significant Challenges that SMEs are Facing

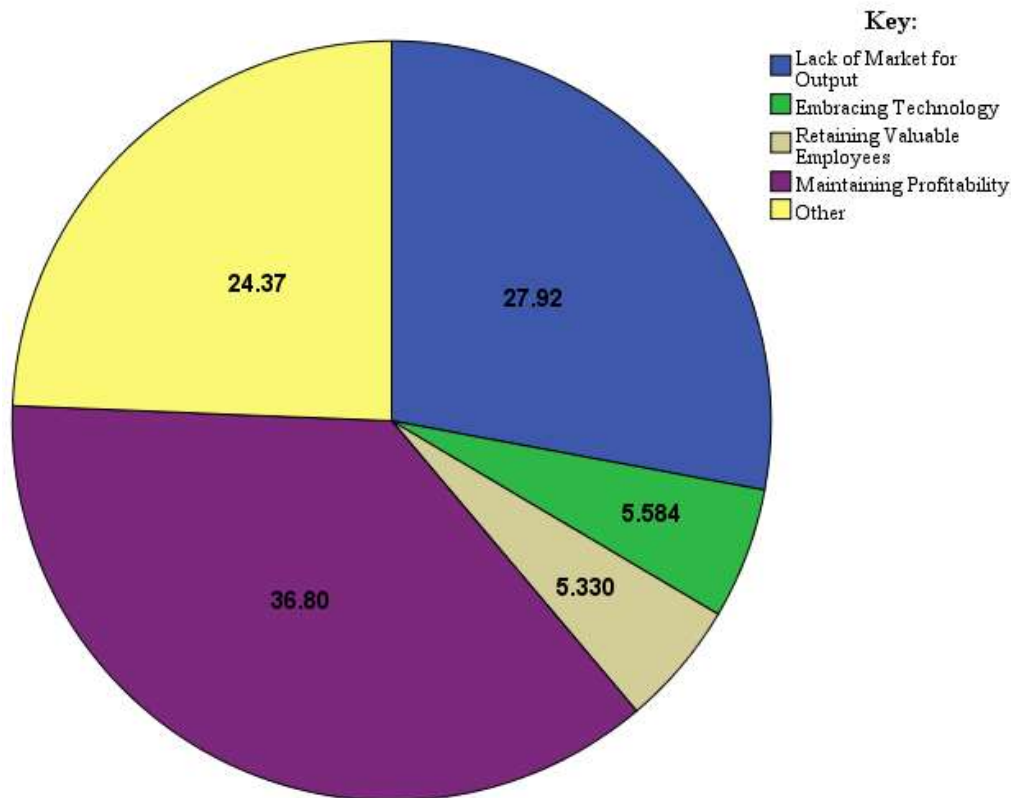
On high interest rates, the respondents suggested, that banks should decrease the interest charges that they require on the loan they afford SMEs. Other suggestions were that financial institutions should lower their collateral requirements because many SME owners stated that they had no collateral against which to secure finance from banks and financial institutions. Consulting a bank officer came in second highest in the responses obtained, with 30.20%. Such a response was mainly obtained from SME owners who had taken a loan before and were satisfied with the process of obtaining loans. They indicated that talking to a banking specialist enabled them to get a better understanding of the loan process and the requirements to get the funds. The respondents also suggested that applying for funding in other financial institutions other than banks increased the chances of getting the funding.

FIGURE 1.1: WAYS TO MAKE ACCESS TO FUNDING EASIER



Source: Own, 2020

FIGURE 1.2: OTHER CHALLENGES FACED BY SMEs



Source: Own, 2020

The respondents were also asked whether they were facing other challenges other than the ones that influenced their access to finance. The respondents indicated that they were facing a wide variety of challenges. Figure 1.2 above shows the results obtained and maintaining profitability emerged as the biggest challenge they were facing with a 36.8%. This is perhaps one of the hardest and yet most important challenges faced by SMEs not just in Eswatini, but all over the world (Lambert, 2019). Lack of market for output was the second largest challenge SMEs faced other than accessing finance. This is evidenced by a 27.92%, which could be directly attributed to the intense competition as well market saturation. A failure to attract new customers could mean that the business struggles to stay afloat amongst the tough competition out there (Lambert, 2019). In addition, SMEs do not conduct much market research but rather produce and push products into the market with hope that people would buy. The "Other" option had a 24.37% and included challenges such theft of collections, especially in the transport business. Some SMEs brought up the seasonality of their business as another challenge which they face which limits the amount of revenue they stand to generate and this subsequently affects their profitability.

Moreover, they had a problem of embracing technology, which accounted for a 5.58% as shown in Figure 1.2. Technology plays a crucial role in pretty much every business these days and its impact on your day-to-day operations will be surprisingly high, even if you do not quite realize it just yet (Lambert, 2019). Up to date technology is expensive and SMEs did not have enough funds to invest in most recent technology that could transform their businesses. Lastly, they were not able to keep their most valuable employees. They revealed that their employees move around looking for better pay elsewhere rather than committing to one business.

CONCLUSIONS AND RECOMMENDATIONS

The researchers made the following conclusions from the study:

- The general feeling amongst SMEs was that they are in heavy need on finance, especially external finance. The unanimous findings were that high interest charges as well as a lack of collateral were the factors that influenced their access to finance the most. These two prominent factors were also the reason behind the majority of SME owners not accessing loans for their businesses.
- For the SMEs that were found to have established themselves through obtaining a loan, the findings were that these loans were informal loans, money borrowed from friends, family and other relatives, as opposed to acquiring the loan from reputable financial institutions.
- The SMEs have a desire to increase the products that they offer but financial challenges are preventing them from doing so.
- Many respondents are of the opinion that government plays no active role in their operations and that they have not, in any way, benefited from government assistance before. Respondents also had no substantial information about the vast schemes and programs that government has established in an effort to aid SMEs in their quest to obtain external finance.
- There should be an increased focus in changing the mindset of a lot of SME owners because the majority of them are dissatisfied with banks and the high interest rates that they supposedly charge. This misconception by owners has led to them not even daring to enquire about whether they can obtain loans from these financial institutions. Financial institutions could embark on roadshows that seek to clear these misconceptions.
- In trying to address the issue of SMEs not being able to obtain finance due to their nature of business, banks should increase the ties it has with SMEs, not just providing financial support, but providing operational assistance which will potentially increase performance and lead to the SMEs having the ability to pay back any funds sourced externally.
- Government and development agencies should increase the awareness of their programs and schemes to SMEs. Many SMEs cited that they have very little knowledge when it comes to government initiated programs, and as such, they have made close to no efforts to inquire about any schemes that could potentially provide funding. This means that rigorous strategies must be put in place to inform the public in general.

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AN ANALYSIS ON TRACKING ERRORS OF EXCHANGE TRADED FUNDS: AN INDIAN PERSPECTIVE

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ABSTRACT

Exchange-traded funds (ETFs) have expanded considerably since their first introduction two and a half decades ago, becoming one of the most common passive investment vehicles for retail and professional investors however their tracking ability is often questioned. In this research paper we estimate the tracking errors from a sample of 5 Equity, 5 Gold and 2 Global ETFs of Indian market using two different methods. We find that in all tracking error measurements, Equity ETFs appear to exhibit lower tracking errors than gold and global ETFs. We also analyze and discuss the variables that influence error tracking. It is found that expense affects the tracking ability of ETFs. This paper also analyses ETFs performance for the last 5 years. The results of this study on ETF performance and tracking error determinants are consistent with the evidence presented in the literature.

KEYWORDS

tracking error, fund size, expense ratio, exchange traded fund.

JEL CODES

C33, C58, D53.

1. INTRODUCTION

The financial resources of many entities are combined by exchange traded funds and used to buy different tradable monetary assets, such as shares, debt instruments, such as bonds and derivatives. The majority of ETFs are registered with India's Securities and Exchange Board (SEBI). It is an appealing option for investors with limited stock market expertise. ETFs share the distinctive characteristics of both shares and mutual funds. In general, they are traded on the stock market in the form of shares produced through blocks of creation. ETF funds are listed on all major stock exchanges, and can be purchased and sold during the equity trading period as required. The cost of the underlying assets present in the resource pool depends on the changes in the share price of the ETF. Where the price of one or more assets increases, the ETF's share price increases proportionately, and vice versa.

CATEGORIES OF ETFs

ETFs can be broadly classified into four categories:

1. **Equity ETFs** – The exchange-traded funds track the movement of stock indices from a specific sector or industry or a collection of stocks. The idea is to replicate the index or industry performance by investing in stocks accordingly.
2. **Gold ETFs** – Gold investments are considered to be a major hedge against currency fluctuations and economic downturns. However, there are several concerns about investing in physical gold, such as security, quality, resale, taxation, etc. Without the hassle of investing in physical gold, gold ETFs invest in gold bullion and allow investors to include gold in their portfolio.
3. **International exposure ETFs** – A few ETFs track stock lists of global business sectors. They permit financial backers to acquire openness to global business sectors and partake in the development accounts of specific economies.
4. **Debt ETFs** – These trades exchanged assets put resources into fixed-pay protections.

Instead of opting for mutual funds or a company's shares, there are several advantages to investing in an ETF. Purchasing a company's shares keeps you limited to that company's own performance, subjecting you to a higher degree of risk. Investing in exchange traded funds, on the other hand, allows you to keep your finances spread over various companies' equities, significantly diluting your risk. Even if one asset is underperforming in an ETF's resource pool, the exceptional growth of other assets can compensate for it. Reduced expenses are one of the significant advantages of investing in an ETF over mutual funds. In mutual funds, multiple charges are involved, such as entry and exit load, management fees, etc. This increases the total cost of the mutual funds incurred, and thus the total cost ratio.

WHAT IS TRACKING ERROR?

Tracking error is a related but distinct metric. Tracking error is about variability rather than performance. Math geeks measure variability through standard deviation. Tracking error is the annualized standard deviation of daily return differences between the total return performance of the fund and the total return performance of its underlying index investors globally. In order to assess portfolio managers, tracking errors can be used from an investor's point of view. It is a sign that there is something significantly wrong with that investment and that the investor should most likely find a replacement if a manager realizes low average returns and has a large tracking error. It can also be used to forecast performance, especially for managers of quantitative portfolios who build risk models that include the likely factors influencing price changes. The managers then create a portfolio that uses the type of benchmark components (such as style, leverage, momentum, or market cap) to create a portfolio that will have a tracking error that will be closely tracked.

REVIEW OF LITERATURE

Dr. J K Raju, Mr. Manjunath B R, Mr. Rehaman M (2018) This paper is a study of the Performance evaluation of gold ETFs in India. Gold ETFs were launched mainly with an objective to increase the liquidity for the better market efficiency. This aims at discovering and analysing risk in the emerging security in the stock market i.e. Gold ETFs. This paper examines the performance of gold ETFs funds with the help of performance tools such as Sharpe, Treynor and Jensen performance measures. The trading in Gold ETFs is increasing over the time as the gold prices are regularly touching new high and the investors are investing in these ETFs.

Dr. M. Jayanthi, Ms. S. Malathy (2013) The purpose of study is to analyse and compare the historical data of various gold ETFs in India, to track the performance of gold ETF in relation to returns on daily, weekly, monthly, quarterly and yearly basis, to analyse the performance of AUM and NAV of gold ETF companies and analyse the future expected returns of gold ETF on quarterly basis. This paper conclude that the research indicated that many of the gold ETFs currently available in the Indian market exhibit a large deviation from actual gold returns. This problem is more pronounced in India than in developed markets. This means that as gold prices rise or fall, the gold ETF value should also rise or fall to that extent. Gold ETFs turn out to be a good investment option for investors to hedge their assets against the uncertain global market scenario.

Mrs. Madhavi Eswara (2015), the current study aims to study the performance of gold ETFs for the last five years (post-crash period) and also tries to evaluate the relationship of gold ETF's to spot Gold prices and gold ETF's to Nifty by using regression and correlation techniques. Out of the five gold ETFs selected in the study, GOLDSHARE is found to be more correlated to the spot gold price followed by GOLDBEES. The study also finds that the relationship of gold ETFs to Nifty is inverse, meaning that as Nifty decreases gold ETFs perform better, which is a unique phenomenon observed mostly in India.

Geetha E (2020), This study aims to examine the performance of most actively traded shares in Exchange Traded Fund and any influence, along with tracking the information from the index. This study also analyses the currency fluctuation and its impact on returns and volatility of ETF and index. The equity ETF, which tracks NASDAQ (NDX 100), is chosen for the study, and the data analysis is carried out using statistical methods such as correlation, regression, and GARCH model. The study concludes that Motilal Oswal shares in NASDAQ 100 ETF are highly sensitive to the NDX 100 movements; thus, there is no direct impact between ETF and index performance through exchange rate fluctuation.

Pooja Srivastava and Dr. Aftab Alam (2018), This research paper compares the performance of two competitive financial instrument available to Indian investors namely ETFs and Index fund, with the perspective different parameters like return, performance effectiveness, expense ratio, tracking ability etc. and investment behaviour of investor. This analysis demonstrates better performance of ETFs in terms of their expense ratio and performance effectiveness over long-term investment horizon. To the best of our knowledge, there has been no previous published research study which empirically compares the performance of ETFs and index funds in India, and this is the first attempt in this direction.

Sathish Kumar, B. and Ram Raj, G. (2019) the purpose of this study is to use different statistical models to estimate the relationship between gold and the Gold Exchange Traded Fund (ETF) and the production of gold ETFs in India. The findings of the study cover a period of three years from 2015 to 2018. Data is collected from the database of the National Stock Exchange and other datasets. The result of this study was to determine whether the ETFs of gold and gold were related. Gold ETFs have been shown to have more returns than actual gold.

STATEMENT OF PROBLEM

Tracking error is the deviation between the price behaviour of a position or a portfolio and the price behaviour of a benchmark. It is important to explore the tracking errors in ETF's and analyse the factors that influence tracking error and compare the tracking errors of three classes of ETF's in order to understand how actively the fund is managed. It is important for investors to know about the tracking error as to which ETF to choose. When the investors have already invested in the ETF which is realizing low average returns and has a large tracking error, it is a sign that there is something significantly wrong with that investment and that the investor should most likely find a replacement.

OBJECTIVES OF THE STUDY

1. To determine the possible Tracking error of Equity, Gold and Global ETFs of NSE
2. To analyse the impact of fund size and expense ratio on TE of selective ETFs and discuss the factors that influence the tracking error.
3. To evaluate the performance of selected ETFs of NSE assess as to which category of ETF would be a better investment avenue for the investor.

SCOPE OF THE STUDY

The study is conducted to understand the possible tracking error of the sample ETFs registered on National stock Exchange of India and analyse factors influencing tracking error. The study also analyses the performance of the ETFs. For the purpose of this study a sample of 12 ETFs across different sector have been taken into account for the period of 5 years from 2015-2020.

HYPOTHESIS

For analysis the impact of fund size and expense ratio on tracking error.

H0: There is no significant impact of Fund size and expense ratio on tracking error H1: There is significant impact of fund size and expense ratio on tracking error.

RESEARCH METHODOLOGY

The research is descriptive in nature and secondary data have been used. The three-stage approach is used in this analysis. The first stage consists of finding out the tracking errors in 2 different ways, the first way to measure the tracking error of a fund is by calculating the standard deviation of the return differences between the ETF and its benchmark index. The only short back of this definition of tracking error is that if an ETF always underperforms the benchmark by a constant amount, the tracking error measured by the standard deviation will be zero.

The second way to measure the tracking error of a fund is the absolute difference in returns between the ETF and the index. This definition measures the extent to which the returns on an ETF differ from the returns of its underlying index over the sample period, and considers any absolute deviation in returns as tracking error.

The second stage After calculating tracking error for all the examined funds, we regress them on important characteristics of ETFs to find out if the tracking errors are correlated with the characteristics like yearly expense ratio and fund size.

The independent variables in our study are the natural logarithm of the size of each ETF and its expense ratio.

The performance of the ETFs on the other hand has been evaluated using Sharpe ratio and Treynor ratio. We have assumed that the return on government bonds which is close to 5.91% percent to be the risk-free rate of return for the purpose of calculation of Sharpe and Treynor ratio as the calculation of risk-free return independently was not possible.

EMPIRICAL RESULTS AND DISCUSSION PANEL DATA

Panel data is a data collected through a series of repeated observations of the same subjects.

over some extended time frame in this study we observe 12 ETFs tracking error and performance over the period of five years. Over time, longitudinal data essentially follows the same sample, which fundamentally differs from cross-sectional data because over time it follows the same subjects, whereas cross-sectional data samples different subjects (whether people, businesses, countries or regions) at each point in time. In economic and financial research, panel data is typically used as it gives the advantage over cross-sectional data. It is the multi - dimensional data that involves measurements over some period of time. Compared to time series data or cross-sectional data, this type of data includes more uncertainty, more detail and more quality. It can also detect and quantify statistical effects that are not possible for pure time series or cross-sectional results.

COMPANIES SELECTED FOR THE STUDY

TABLE 1

Name of the ETF	Symbol
UTI Nifty ETF	UTINIFTETF
Kotak Banking ETF	KOTAKBKETF
SBI ETF Banking	SETFBANK
MOST Shares NASDAQ 100	N100
HDFC Gold ETF	HDFCMFGETF
Kotak Gold ETF	KOTAKGOLD
ICICI PRUDENTIAL NIFTY ETF	ICICINIFTY
Axis Gold ETF	AXISGOLD
Birla Sun Life Gold ETF	BSLGOLDETF
IDBI Gold ETF	IDBIGOLD
Motilal Oswal Midcap 100 ETF	M100
Nippon ETF Hang Seng BeES	HNGSNGBEES

Our sample consists of 12 ETFs, 5 Equity and 5 Gold and 2 Global following broad indexes. In the above table, we present descriptive statistics for all funds included in the study with their symbol, assets under management, yearly expense ratio, inception date, benchmark index, daily mean return and daily standard deviation.

TRACKING ERROR OF EXAMINED ETFs

TABLE 2

Name	Returns Difference $\sum_{t=1}^n e_{1:t}$		Absolute Difference $\sum_{t=1}^n e_{1:t} $	
	n		n	
	Mean	SD (TE1)	Mean (TE2)	SD
UTI Nifty ETF	0.0000523	0.0096	0.005298	0.007969
Kotak Banking ETF	0.0000157	0.0057	0.003629	0.004365
SBI ETF Banking	-0.0000751	0.0119	0.004768	0.010902
Motilal Oswal MOST Shares NASADQ 100 ETF	0.0000485	0.0196	0.013190	0.014443
HDFC Gold ETF	-0.0000494	0.0080	0.005728	0.005651
Kotak Gold ETF	0.0000021	0.0089	0.006230	0.006320
ICICI Prudential Nifty ETF	-0.0000256	0.0108	0.004203	0.009926
Axis Gold ETF	-0.0000375	0.0102	0.006965	0.007423
Birla Sun Gold ETF	-0.0000393	0.0139	0.010328	0.009286
IDBI Gold ETF	-0.0000776	0.0124	0.008763	0.008735
Motilal Oswal MOST Shares Midcap 100 ETF	0.0000002	0.0112	0.008157	0.007612
Nippon India ETF Hang Seng BeEs	0.0003181	0.0256	0.018848	0.018637

The tracking errors of each ETF examined are reported in the above table. Based on the first definition of tracking error (TE1), the daily tracking error ranges from 0.0057 for Kotak banking ETF to 0.0256 for Nippon India ETF Hang seng BeEs with a sample average of 0.0122959. The tracking error based on the second definition of tracking error (TE2), ranges from 0.003629 for Kotak banking ETF to 0.018637 for Nippon India ETF Hang seng BeEs with a sample average of 0.008008.

In the table we observe that some simple return differences for ETFs are positive. Although they do not affect the above-mentioned definitions of tracking error we believe they are worth mentioning. In theory, it is desirable for an investor purchasing an ETF to outperform its benchmark for a given period. However, contrary to actively managed mutual funds, ETFs have the objective to track and not outperform their underlying index. Any deviation from its benchmark, positive or negative, is a breakdown of its objective. Investors not only buy ETFs but also short them. An investor that shorts ETFs will be hurt, not helped, by a possible outperformance and will rightfully criticize the ETF managers for diverging of its stated objective. ETF managers have stated their intention to offer stable tracking rather than outperforming so that their funds can be just as useful for short sellers as buyers

AVERAGE TRACKING ERROR FOR GOLD, EQUITY AND GLOBAL ETFs

TABLE 3

Name	Returns Difference $\sum_{t=1}^n e_{1:t}$		Absolute Difference $\sum_{t=1}^n e_{1:t} $	
	n		n	
	Mean (%)	SD (TE1) %	Mean (TE2)	SD
Sample Average	0.00001	0.01230	0.00801	0.00927
Gold ETF's average	-0.00004	0.01067	0.00760	0.00748
Equity ETF's average	-0.00001	0.00982	0.00521	0.00815
Global ETF's average	0.00018	0.02256	0.01602	0.01654

From the average tracking errors of Equity, Gold and Global ETFs are presented in the table. Equity ETFs seem to exhibit lower tracking errors than the gold ETFs and global ETFs. The average TE1 0.01067 is for gold ETFs, 0.00982 for equity ETFs and 0.02256 for global. The average TE2 is 0.00760 for gold ETFs, 0.00521 for Equity ETFs and 0.01602.

REGRESSION TEST – PANEL LEAST SQUARE METHOD – FIXED EFFECTS MODEL

Panel Least Square Method (cross section Fixed effects)

TABLE 4

Dependent Variable: LN_TE_1				
Method: Panel Least Squares				
Date: 01/28/21 Time: 20:55				
Sample: 1 60				
Periods included: 5				
Cross-sections included: 12				
Total panel (balanced) observations: 60				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_EXPENSE_RATIO	-0.341619	0.162451	-2.102902	0.0410
LN_FUND_SIZE	-0.061420	0.093573	-0.656390	0.5148
C	-6.025663	0.773419	-7.790941	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
Root MSE	0.392123	R-squared		0.623625
Mean dependent var	-4.633206	Adjusted R-squared		0.517258
S.D. dependent var	0.644558	S.E. of regression		0.447836
Akaike info criterion	1.432186	Sum squared resid		9.225641
Schwarz criterion	1.920866	Log likelihood		-28.96557
Hannan-Quinn criter.	1.623336	F-statistic		5.862963
Durbin-Watson stat	1.465818	Prob(F-statistic)		0.000003

Dependent variable: expense ratio, fund size Independent variable: Tracking error 1

H0: There is no significant impact of fund size and expense ratio on tracking error 1 H1: There is significant impact of fund size and expense ratio on tracking error 1

1 Interpretation

Since the probability value for test is less than 0.05 for expense ratio. Therefore, we reject null hypothesis and conclude that expense has an impact on TE1. The coefficient for expense ratio is negative. This implies that the expense ratio is negatively associated with the magnitude of tracking error, this is unexpected since expenses directly cause the fund to underperform by that amount. This could be because funds that put more effort in replicating the exact return of the index

(and as a result have lower tracking errors) have to incur more transaction costs and therefore higher expense ratios. However, the probability value is more than 0.05 for fund size therefore, we reject alternative hypothesis and conclude that has no impact on Tracking Error 1.

REGRESSION TEST – PANEL LEAST SQUARE METHOD – FIXED EFFECTS MODEL

Panel EGLS (cross section fixed effects)

TABLE 5

Dependent Variable: LN_TE_2				
Method: Panel Least Squares				
Date: 01/28/21 Time: 21:05				
Sample: 1 60				
Periods included: 5				
Cross-sections included: 12				
Total panel (balanced) observations: 60				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_EXPENSE_RATIO	-0.285446	0.135631	-2.104575	0.0408
LN_FUND_SIZE	-0.102585	0.078124	-1.313101	0.1957
C	-5.872171	0.645731	-9.093836	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
Root MSE	0.327385	R-squared		0.732901
Mean dependent var	-5.006301	Adjusted R-squared		0.657416
S.D. dependent var	0.638811	S.E. of regression		0.373900
Akaike info criterion	1.071309	Sum squared resid		6.430871
Schwarz criterion	1.559990	Log likelihood		-18.13928
Hannan-Quinn criter.	1.262459	F-statistic		9.709286
Durbin-Watson stat	1.307438	Prob(F-statistic)		0.000000

Dependent variable: expense ratio, fund size Independent variable: Tracking error 2 Hypothesis

H0: There is no significant impact of Fund size and expense ratio on Tracking error H1: There is significant impact of fund size and expense ratio on Tracking error 2

2 Interpretation

Since the probability value for test is less than 0.05 for expense ratio. Therefore, we reject null hypothesis and conclude that expense has an impact on TE2. The coefficient for expense ratio is negative. This implies that the expense ratio is negatively associated with the magnitude of tracking error, this is unexpected since expenses directly cause the fund to underperform by that amount. This could be because funds that put more effort in replicating the exact return of the index (and as a result have lower tracking errors) have to incur more transaction costs and therefore higher expense ratios. However, the probability value is more than 0.05 for fund size therefore, we reject alternative hypothesis and conclude that has no impact on Tracking Error 2.

PERFORMANCE ANALYSIS OF ETFs EQUITY ETFs

Sharpe's ratio equity ETFs

TABLE 6

Equity ETFs	Sharpe Ratio	Treynor's Ratio
UTI Nifty ETF	-1.27	-0.01574
Kotak Banking ETF	0.12	0.001262
SBI ETF Banking	-1.04	-0.01332
ICICI PRUDENTIAL NIFTY ETF	-3.26	-0.04356
Motilal Oswal Midcap 100 ETF	-4.26	-0.06534

The Sharpe Ratio for most of the Equity ETFs is negative except Kotak banking ETF. This, in simple terms, means that the returns provided by the ETF are less than what the Risk-Free investment avenues provide. Therefore, for every unit of risk that you take up by investing in an Equity ETF you lose a return amount equal to the Sharpe Ratio. Also, Treynor Ratio has remained negative for most of the Equity ETFs That means that the investor cannot benefit too much from beta. However, Kotak banking ETF has a positive Treynor Ratio. It shows that Kotak Banking ETF is capable of providing positive units of return over and above the risk-free return for the additional risk taken of bearing the impact of fluctuations in the benchmark returns on the ETF. On the other hand, Motilal Oswal midcap ETF has the least Treynor Ratio which means the ETF provides -.065 of less return than the risk – free investment for each unit of beta risk assumed.

Gold ETFs

Sharpe's ratio gold ETFs

TABLE 7

Gold ETFs	Sharpe Ratio	Treynor's Ratio
HDFC Gold ETF	5.77	0.848662
Kotak Gold ETF	6.60	1.384535
Axis Gold ETF	4.33	0.356508
Birla Sun Life Gold ETF	3.48	0.909715
IDBI Gold ETF	3.57	1.053165

The Sharpe Ratio for all of the Gold ETFs is positive. This, in simple terms, means that the returns provided by the gold ETF are more than what the Risk-Free investment avenues provide. Therefore, for every unit of risk that you take up by investing in an Equity ETF you gain a return amount equal to the Sharpe Ratio. Kotak gold ETF has the highest Sharpe ratio which means it is the best performer amongst the other Gold ETFs and Birla Sun life Gold has least Sharpe ration when compared to other Gold ETFs. Treynor Ratio has remained positive for all of the Gold ETFs That means that the investor can benefit much from beta. However, Kotak gold ETF has the highest Treynor Ratio. It shows that Kotak Gold ETF is capable of providing higher positive units of return over and above the risk-free return for the additional risk taken of bearing the impact of fluctuations in the benchmark returns on the ETF. On the other hand, Axis Gold ETF has the least Treynor Ratio which means the ETF provides less return over and above the risk-free return for the additional risk when compared to other gold ETFs.

Global ETFs Sharpe Ratio

Sharpe's ratio global ETFs

TABLE 8

Global ETFs	Sharpe	Treynor's
MOST Shares NASDAQ 100	5.87	0.256494
Nippon ETF Hang Seng BeES	1.91	0.121411

The Sharpe ratio for both the global ETFs is positive. Motilal Oswal Nasdaq 100 has the higher Sharpe ratio when compared to Nippon ETF hang Seng BeEs. Also, the Treynor ratio is positive.

FINDINGS AND CONCLUSIONS

Motilal Oswal Nifty midcap 100 ETF has given least returns among all the ETFs in the past five years with an average of 0.49%. Most Shares NASDAQ 100 ETF has given the best returns among all the ETFs with an average of 14.63%. In the Equity market, Kotak Nifty ETF has provided the best returns with an average of 6.07%. Motilal Oswal Nifty Midcap 100 has provided the least returns in the Equity ETF market with an average of 0.49%. In the Gold market Kotak Gold ETF has provided the best returns with an average of 11.45%. Axis Gold has provided least returns in the gold ETF market with the average 9.83%. In Global market, MOST Shares NASDAQ 100 has provided highest returns with an average of 14.63%. Nippon ETF Hang Seng BeES has provided the return of average 10.64%. Kotak banking has the lowest tracking error among the samples with TE of 0.0057 to for. Nippon India ETF Hang seng BeEs has the highest tracking error among the samples with TE of 0.0256. Among the equity ETFs, Kotak banking has the lowest tracking error with TE of 0.0057. SBI ETF Banking has the highest tracking error among the equity ETFs with TE of 0.0118. Among the Gold ETFs, HDFC Gold ETF has the lowest tracking error with TE of 0.008046. Birla Sun life Gold ETF has the highest tracking error among the gold ETFs with TE of 0.0138. Among the global ETFs Most Shares NASDAQ 100 ETF stands first with the lower Tracking Error of 0.0176. Nippon ETF Hang Seng BeES stands second with the higher tracking error of 0.02642.

ETFs have grown considerably since their first introduction in 1993 becoming one of the most popular passive investment vehicles among retail and professional investors because of their low transaction costs and high liquidity. This study finds that some ETFs exhibit noticeable tracking errors while trying to replicate the performance of their underlying indices. This is somehow expected as ETFs frequently suffer deviations in performance compared to their underlying indexes because of frictions occurring in the market. Investors should be concerned with tracking errors as these can result in a performance of the ETF that deviates importantly from the benchmark that the investor is seeking exposure to. In the first decades of the 21st century, ETFs were perhaps the greatest game-changer in the asset management industry. These investment vehicles offer a combination of characteristics not previously available to investors: low-cost transactions, intraday liquidity, and tracking of passive indexes. The increase in ETFs is part of a wider process that has taken place over the past three decades in the asset management industry. The ability of ETF prices to genuinely reflect the value of underlying securities depends on the presence of arbitration facilitator agents: high-frequency arbitrators, hedge funds, and APs.

ETFs remain an increasingly popular financial product and there is a fundamental value in the structure of these products that justify this popularity. They provide exposure to almost all indices available, more than mutual funds do. ETFs offer investors the ability to trade them throughout the day. Another interesting feature of ETFs that is important to investors is that the tracking errors are relatively stable over time. It is therefore wise to investigate the performance differences between ETFs. All together ETFs provide some interesting features to investors. For the future ETFs will continue to grow in both numbers and assets and that both tracking errors and net asset value deviations will drop. By making the funds more efficient in replicating an index, tracking errors can be kept low. The results of this study help the investors to decide on which ETF to choose and it also evaluate fund manager's efficiency of managing the ETFs.

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