

Linkages between Informal and Formal Wearing Apparel Sector in Assam: An Economic Analysis

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Abstract

The present study aims to examine the inherent backward and forward linkages between the informal and formal wearing apparel sector in Assam. Using a logistic regression framework, we find that total workers, increase in profitability and future expansion plans is positive and significant in determining the probability of presence of linkages. On the quality of linkage, the linkage pattern has been found beneficial, only when the main supplier and main client are in the formal and informal sector respectively. We also demonstrate the limited market reach capacity of the enterprises indicating the fact that sub-contracting occurs mostly among the informal enterprises and households. The plight of the workers raises some relevant concerns which are addressed in the end, positing policy recommendations to reduce the gap between the sectors in terms of improving the level of technology and quality of the products.

Introduction

The wearing apparel forms a major segment of the Indian textile industries because of its production of clothing for men, women and children in both domestic and export markets. The sector includes production processes where activities like design, cutting, sewing of garments from fabric is involved (Ribhu & Agrawal, 2009; Sen, 2013) and is one of the largest employment providers in the country especially to women, semi-skilled and unskilled labourers (Indrakumar, 2013). The organisational structure of the wearing apparel sector is quite fragmented; comprising of the informal enterprises on one side and medium-sized/large scale factories on the other (Kalpagam, 1981; Unni et al, 1999; Kabeer & Mahmud, 2004; Mezzadri, 2008). In that regard, the works of many scholars suggests how the linkages operating within informal wearing apparel sector provides intriguing domains to work on as the integration of these informal

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enterprises with the formal units forms an integral part of their production operations (Gross & Kharate, 2017; Chen, 2014; Devey et al, 2006; Ince, 2003).

The manufacturing of wearing apparel plays an important role in the economy of the North-East India. National Sample Survey Office [NSSO] 73rd Round, (2015-2016) shows the share of wearing apparel in the total urban informal manufacturing sector comes to 42.4 %, 41 %, 30 % and 21.4 % in the states of Arunachal Pradesh, Meghalaya, Assam and Tripura respectively. For Assam, the textiles and wearing apparel sector alone constitutes the industrial group with the highest incidence of subcontracting (28 %).

The fact that manufacturing hasn't been able to compete on a larger scale in North-East is quite apparent. In Assam, apart from few significant industries, the state hasn't been able to tap the abundant labour force, natural resources to make the informal manufacturing sector more vital (Mazumdar, 2012; Saikia, 2014; Saikia & Barman, 2018). The wearing apparel sector, as evident from the literature, is a labour intensive sector and mostly involves the people belonging to the informal sector. The industry is fragmented into stages like, cutting, stitching, dyeing, printing which implies the presence of linkages (Uchikawa, 2012; Ribhu & Agrawal, 2009). The analysis of the linkages of this sector in Assam through a pilot survey exhibits a similar story altogether. Mostly dominated by small enterprises working in constricted quarters, the sector is highly informalised. It comprises of both medium sized enterprises and factories, which are less in number and a multitude of small enterprises.

The growing importance of the wearing apparel sector in income and employment generation, calls for a detailed study of its various dynamics in Assam, which is considered as a manufacturing hub of North-East India. The present study of the Informal Wearing Apparel Manufacturing Enterprises (IWAME) is an attempt to explore its linkages, which has become fundamental in the field of research. Examining its linkages, to see how these enterprises are integrated with the formal sector units will give major insights in what aspects they are lagging behind and what can be further done to make these enterprises at par with the rest of the clusters in India.

The study thematically divides the literature into two sections: firstly, we discuss the existence and pattern of linkages between the informal and formal sector. We then move on to outline the process of informalisation and the kind of linkages that are prevalent in the wearing apparel sector.

1. Existence and Pattern of Linkages in Informal Sector

One of the influential works by (Breman, 1976; Uzzel, 1980) states how the informal sector cannot be viewed as a sector isolated from the rest of the economy as it has linkages with the formal sector. The most common type of linkages between them are the backward and forward linkages (Arimah, 2001) along with technological,

credit and consumer linkages (Sahu, 2010). Two fundamental views have been put forward regarding the linkages pattern between the informal and formal sector. The complementary approach which views the two sectors as mutually beneficial to each other (ILO, 1972; Papola, 1981; Devey et al, 2006; Breman, 1976; Brown & Roever, 2017) and the exploitative view, where the relationship between the two sectors is seen as exploitative in nature (Shaw, 1985). The exploitative nature between the two sectors is generally seen in manufacturing activities because of the formal sector's control on the marketing system (Romatet, 1983). In another study, the quality of linkages (whether they are complementary or exploitative) is explored by looking at which sector does the informal enterprise has its main client and main supplier (Kumase, 2018).

While studying about the linkages between the formal and informal sector, the system of subcontracting is important to understand their interaction (Monroy et al, 2014). Studies have argued that sub-contracting relations are more common among the modern segment of the informal sector (Arimah, 2001; Basole et al, 2015; Monroy et al, 2014). One of the fundamental reason behind subcontracting is the comparative cost advantage gained by the formal sector (Nagaraj, 1984). The availability of unlimited cheap labour in the informal sector gives a chance to the larger firms to farm out their production activities to the smaller units. Empirical evidences from West Bengal, Haryana and Maharashtra shows the existence of greater subcontracting arrangements in the urban areas mostly common in textiles and paper industries (Sahu, 2010). These linkages can help them to reach a wider market area (Bhattacharya & Kesar, 2018) along with an impetus to improve their technology (Basole et al, 2015), all of which can bring major transformations in the traditional informal units.

2. Informalisation and Linkages in Wearing Apparel Manufacturing

The apparel sector which comprises mostly of the small units has vast potential to become competitive at the global level if the infrastructure and supply bottlenecks are addressed (Ramaswamy & Gereffi, 2000). The large scale informality prevalent in the sector has been documented by various studies (Goldar & Aggarwal, 2019; Mezzadri & Srivastava, 2015). Mostly, informalisation takes place through subcontracting arrangements to the informal economy which can include home-based workers or workers, who are not registered or part of any unions (Ascoly, 2004). We get a better understanding of the organisational structure of the industry by drawing attention to relevant literature in Bangladesh, which is considered as the hub for garment industries (Labowitz & Baumann-Pauly, 2015; Mottaleb & Sonobe, 2011; Yunus & Yamagata, 2012).

In India, detailed surveys have been conducted in major apparel clusters to give an idea on the working of the informal sector. Comprehensive studies by (Ribhu & Agrawal, 2009; Kalpagam, 1981), on unorganised garment manufacturing in India explores the apparel industry and its numerous series of processes from cutting, sewing, designing

of garments from fabric and other activities like dyeing, embroidery performed by the informal units. The interplay of independent, small units to subcontracting units and sometimes home-based workers shows the several layers of units engaged in the production process. The nature and role of the informal sector on the wearing apparel sector in India are mostly similar as shown by other studies. Studies by (Sen, 2013; Unni et al, 1999; Mezzadri, 2008) describes the inherent fragmentation of the wearing apparel labour market in West Bengal, Ahmedabad and Delhi respectively. In a typical garment unit in Delhi, workers are engaged in primary operations like cutting, stitching, thread cutting, packing of garments. Other processing activities are farmed out to the specialised agents but mostly tailoring activities are performed by the sub-contracting units (Mezzadri, 2008)

It's important to stress here that the literature focusing on these linkages is scanty in the context of North-East India. One of the reasons being is the lack of industrialisation and dominance of small scale enterprises especially in this sector. When looking at the linkages patterns in Assam, it is found that as compared to other states, the subcontracting linkages are weak in Assam and only a small percentage of the unregistered firms are linked with the registered firms (Dutta, 2017). Similar studies have been done where production linkages are analysed between the formal and the informal sector, and findings have revealed that the backward linkage of these informal enterprises is stronger than forward linkage as most of these enterprises purchase raw materials and other intermediate goods from the formal sector (Mazumdar, 2012) .

Looking into the various studies of sub-contracting, it has been noted that, the impact of subcontracting has been low in India (Bhattacharya & Kesar, 2018), due to the low level of technology, low skills and investment of the informal sector enterprises (Uchikawa, 2011). Before probing into these issues in our case study, we present a brief overview of the prevalence of sub-contracting in North-East India and Assam in particular.

Going back to the period of 2010-11, in the context of North-East (Refer to Table 1), states like Arunachal Pradesh, Assam and Nagaland shows higher prevalence of subcontracting in urban areas whereas, Meghalaya, Manipur, Tripura shows higher share of enterprises working on contract basis in rural areas. This scenario has changed in 2015-16, as for the urban region, only Tripura displayed higher share of subcontracting as compared to the rest, whereas for the rural areas, Assam, Manipur, Tripura are notable mentions. Overall, states such as Assam, Manipur, Mizoram, Tripura shows higher incidence of enterprises operating on contract basis.

Table 1: Percentage Share of Enterprises on Contract Basis in North-East India

	Percentage of Subcontracting Units			
	Rural		Urban	
States	2010-11	2015-16	2010-11	2015-16
Arunachal Pradesh	0.26	0.4	0.66	0.20
Assam	0.48	4.1	0.55	3.90
Meghalaya	0.81	1.1	0.40	0.00
Manipur	0.90	3.9	0.48	3.90
Mizoram	1.26	3	0.13	1.70
Nagaland	0.36	0.0	0.73	0.40
Tripura	2.12	5.5	1.68	8.00
Sikkim	0	0.8	0	0.60

Source: Authors' calculation using NSSO unit level data (67th and 73rd round)

Note: Given figures are percentages within the sector

Further, we have tried to identify the percentage of enterprises under manufacturing operating on contract basis among the major industry groups in Assam (Refer to Table 2). The industries broadly engaged in contract basis include the textiles and wearing apparel, manufacturing of furniture and other manufacturing (jewellery, other articles n.e.c). As corroborated by studies such as (Sahu, 2010; Nagaraj, 1984), industries which are labour intensive, segmented and where production runs through multiple layers mostly undertake subcontracting.

Table 2: Industry Wise Percentage Share Operating on Contract Basis in Assam

Description of Manufacturing Activity (NIC-08)	Percentage of Enterprises Working on Contract Basis 2015-2016
Manufacturing of food products (Div. 10)	1.12
Manufacturing of textiles and wearing apparel ((Div. 13-14)	27.61
Manufacturing of wood and products of wood (Div. 16)	5.22
Printing and reproduction of recorded media (Div. 18)	5.22
Manufacture of other non-metallic mineral products (Div. 23)	2.61
Manufacture of fabricated metal products (Div. 25)	6.34
Manufacture of electrical equipment , machinery	
Equipment, motor vehicles, trailers and semi-trailers (Div. 27, 28, 29)	1.12
Manufacture of furniture (Div. 31)	39.55
Other manufacturing (Div. 32)	10.82
Repair and installation of machinery and equipment (Div.33)	0.37

Source: NSSO unit level data (73rd round)

Note: 1) The percentages are calculated among the industrial groups on a contract basis

2) Figures are shown for both rural and urban sector

Exploring further into the contract system prevalent in the informal sector in Assam (Refer to Table 3) our findings show similar results for both rural and urban areas. Majority of these enterprises work on a contract system but cater mostly to the customers. As regards to the backward linkages, in case of manufacturing enterprises, the dependence on the contractor for machinery is less since it is mostly self procured (Rural: 85 %, Urban: 86.7 %). Additionally, for a higher share of enterprises, the supply of raw materials is both self-procured and received from the contractor (Rural: 51.6 %, Urban: 45 %). However, the design specification is mostly specified by the contractor.

Table 3: Structure of Contract System in Informal Sector in Assam

Type of Contract	2015-2016	
	Rural	Urban
Working solely for other enterprise/contractor	16.6	20.1
Mainly on contract but also for other customers	22.3	35.1
Mainly for customers but also on contract	61.1	44.8
Equipment supplied by		
Self- procured	85	86.7
Supplied by the master unit/contractor	6.5	7.5
Both	8.5	5.8
Raw material supplied by		
Self- procured	20.9	26.7
Supplied by the master unit/ contractor	27.5	28.3
Both	51.6	45
Design specification		
Specified by the contractor	83	90
Not specified by the contractor	17	10

Source: NSSO unit level data (73rd round)

Note: Given figures are sector-wise percentage shares

As the literature points out, the various rounds of NSSO provide only limited information about the nature of subcontracting prevalent in the industries. Most of the aspects of quality of linkages, sources of linkages etc. are overlooked (Sahu, 2010). Also, there is a possibility these surveys underestimate the size of informal sector (Basole & Basu, 2011). Thus, it is often advocated to consider data from individual case studies for a more sound understanding. Additionally, even though the general nature of these linkages can be understood from the studies given by different authors, every manufacturing industry will have its own distinctive pattern of linkages which needs to be analysed. On that backdrop, due to the high prevalence of subcontracting in the wearing apparel manufacturing sector, the present study makes an attempt to investigate the linkages of IWAME in Assam to have a comprehensive understanding of the contract system in operation.

The following research questions are being addressed

- i. What are the factors that determine the likelihood of presence of linkages between the IWAME and the formal units?
- ii. What are the quality of these linkages in existence (whether complementary or exploitative)?
- iii. What are the differences in the sources of orders for IWAME and its formal counterpart?

Addressing these questions, the paper is organised into the following sections: Section I covers the Introduction; Section II is about the data sources, hypotheses and methodology; Section III presents the main findings of the study and Section IV provides the conclusion.

Data and Methodology

1. Data Sources

The present study refers to the database taken from NSSO unit level data covering two rounds of enterprise level surveys of unorganised sector in India: 67th (2010-2011) and 73rd round (2015-2016). Additionally, secondary data was also collected from the District Industrial Centre, Guwahati for the formal enterprises listed in the city. For the primary data, information regarding IWAME has been collected from each of the six zones in the Guwahati Municipal Corporation Area. The final population/universe consisted of all the IWAME currently in operation in all these six zones. These were determined through snowball sampling method, street counting and through information from handloom exos, readymade garment shops, households and tailoring shops. It was followed by construction of the operational sampling frame (1200 enterprises) which consisted of those sampling units with less than 10 workers and that are at least in five years of operation or more. After constructing the sampling frame, the proportionate sampling method was adopted to decide on the no. of samples (500 enterprises) to be taken from each zone relative to the entire population (Refer to Table 4).

Table 4: Proportionate Sampling technique

Zones	No. of enterprises	Proportion to total	No. of sample units for zone	Actual no. of sample units for the study
Dispur zone	385	0.321	160.42	160
Lokhra zone	54	0.045	22.50	22
East zone	270	0.225	112.50	113
Central zone	202	0.168	84.17	84
South zone	112	0.093	46.67	47
West zone	177	0.148	73.75	74
	1200		500	

Source: Field survey data

2. Research Hypotheses and Methodology

Drawing from the existing literature, which explicitly mentions how sub-contracting linkages are more dominant among the modern segment of the informal enterprises (Monroy et al, 2014; Arimah, 2001) and larger informal enterprises in terms of more workers (Basole et al, 2015); studies have also argued how the absence of linkages are observed more among the lower rungs of the informal enterprises (Ranis & Stewart, 1999) and those with lower capital assets (Bohme & Thiele, 2012). In view of the above, it is hypothesized that:

H1: Larger informal enterprises (in terms of more hired workers) are more likely to have linkages with the formal units.

To test the hypothesis, a logistic model has been used to determine the likelihood of presence of linkages between the informal and the formal enterprises. The model specification is given in this form (Hakim et al, 2010):

Model specification:

$$Y_i^* = \beta X_i + u_i \dots\dots (1)$$

Where: $Y_i = 1$ (presence of linkage) if $Y_i^* > 0$

$Y_i = 0$ (absence of linkage) if $Y_i^* < 0$

B = vector of parameters

X_i = vector of independent variables

U_i = error term

Most of the variables considered for the model are adopted from (Mazumdar, 2012; Arimah, 2001) such as: whether the unit has future plans for expansion (FEXP), total workers (TWORK), whether the unit has seen an increase in profitability over the years (PROE), type of establishment (EST), access to training (TRAIN) and credit facilities (CRED).

The probability of enterprise i having linkages could be written as follows:

$$\Pr (Y_i = 1 | X_i) = F(X_i' \beta) = \frac{\text{Exp}(X_i' \beta)}{1 + \exp(X_i' \beta)} \dots\dots (2)$$

Where $X_i' = [\text{FEXP}_i \text{ TWORK}_i \text{ PROE}_i \text{ EST}_i \text{ TRAIN}_i \text{ CRED}_i]$

Equation (2) is estimated to find out the probability of the enterprise having linkages.

The second hypothesis formulated is:

H2: Linkages between the IWAME and its formal sector are exploitative in nature.

To determine whether the linkages are exploitative or complementary, the log-lin model has been used (Kumase, 2018). The model follows some specific assumptions: Firstly, it assumes that all informal enterprises favour linkages with the formal units due to added benefits of higher prices and profits. Secondly, the linkage will be beneficial only when the informal enterprise can increase its sales while making transactions with the formal sector. Thirdly, for the purpose of this analysis, we concentrate on exploring the quality of linkage by looking at the sales aspect of forward linkage. To test the hypothesis, the following equation is estimated:

$$\text{Log}(m_i) = \beta_1 + \beta_2 DE_1 + \beta_3 DE_2 + \beta_4 DE_3 + \beta_5 DE_4 + \beta_6 DE_5 + \mu_i \dots\dots\dots (3)$$

Here, the dependent variable is taken as monthly earnings of the enterprises, which is regressed on various independent variables such as gender of the entrepreneur ($DE_1 = 1$, if male; $DE_2 = 0$, otherwise), part of a cluster ($DE_2 = 1$, if enterprise is part of cluster ; $DE_2 = 0$, otherwise), type of establishment ($DE_3 = 1$, if establishment is permanent; $DE_3 = 0$, otherwise), years of experience ($DE_4 = 1$, if years of experience is more than 10 years; $DE_4 = 0$, otherwise), the main supplier of the informal enterprise ($DE_5 = 1$, if the main supplier is formal; $DE_5 = 0$, otherwise).

Results and Discussion

1. Type of Contract System

To develop an overarching understanding into the contractual system in existence for the IWAMEs, four important aspects of backward and forward linkages are summarised (Refer to Table 5)

Table 5: Type of Contract System in IWAME

	Percentage of enterprises
Procurement of raw materials	
Formal sector	16.4
Informal sector	45
Both formal and informal sector	38.6
Procurement of machinery and equipment	
Formal sector	31
Informal sector	26.2
Both formal and informal sector	42.8
Type of main market	
Domestic market	96.6
Both domestic and export market	3.4
Kind of products given for production	
Basic intermediate goods	46.6
Final products	10.6
Both	33

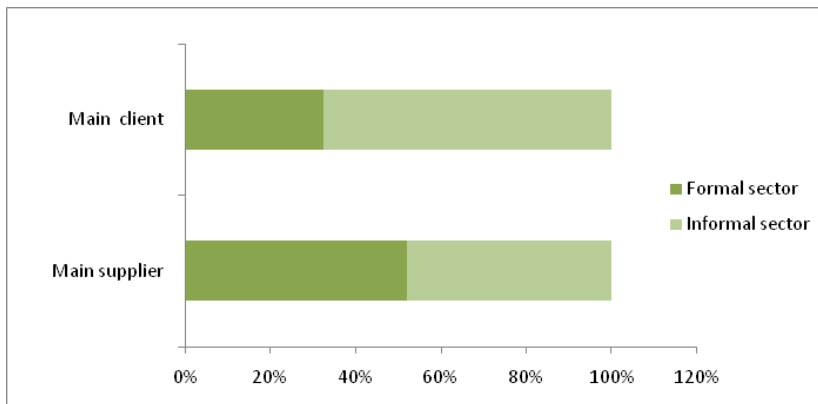
Source: Field survey data

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As regards to the backward linkages, the raw materials is mainly procured from the informal sector (45 %) however, procurement of machinery and equipment is from both formal and informal sector, as shown by 42.8 % enterprises. Clearly, we also observe the dependence of IWAMEs on the formal sector for capital goods (31 %). With regard to the type of main market, unsurprisingly, 97 % of enterprises serve only the domestic market. This reflects their inability to reach a wider market area. Coming to the sub-contracting agreements, the survey noted that the orders mostly restrict to basic intermediate goods (47 %) which demands simple sewing, stitching, thread cutting works to be done and sent back for final finishing.

The magnitude of these linkages has been further probed in the following section (Please see Figure 1) which shows the main client and suppliers of the IWAME.

Figure 1: Main Client/ Supplier of IWAME



Source: Field survey data

As evident from the findings, the percentage of formal firms that serve as main supplier (52 %) is higher than those who serve as main clients (32.4 %) for the IWAMEs, clearly indicating the dominance of backward linkages over forward linkages. Because of the greater magnitude of backward linkages, the next section examines the factors that determine the probability of existence of backward linkages between the IWAMEs and the formal units.

2. Results of Logistic Regression

As previously noted, the binary dependent variable takes the value of 1, if there is presence of backward linkages and 0, otherwise. For description of the predictors, refer to Table 6.

Table 6: Description of the Predictors

Predictors	Description
FEXP (Future expansion plans)	(Dummy) Yes =1, No=0
TWORK (Total workers)	(Continuous) Total hired workers
PROF(Profitability of the enterprise)	(Dummy) Yes =1, No=0
EST (Type of establishment)	(Dummy) Permanent = 1, Temporary =0
TRAIN (Access to training facilities)	(Dummy)Yes =1, No=0
CRED (Access to credit facilities)	(Dummy)Yes =1, No=0

The enterprises which have envisaged to expand in the future are expected to engage in buying raw materials from formal sector; this also applies to enterprises that have seen an increase in their profitability. Moreover, enterprises which have permanent establishments are expected to be better interconnected with formal enterprises. The training of workers and credit availability also work as an added impetus to engage in purchasing raw materials from the formal sector. Finally, the no of hired workers, as stated in the hypothesis, is expected to positively impact the probability of having linkages. For the Model fit statistics, refer to Table 7.

Table 7: Model Fit Statistics

Log likelihood	147.599
χ^2	50.956*
(df)	6
Nagelkerke R square	0.296
Overall predicted accuracy	95.2

**Significant at 1 % level of significance*

Note: Hosmer -Lemeshow test [$\chi^2=11.622$ (non-significant) ($p > 0.05$)] show that the model is a good fit.

The estimation results of the parameters and the log ratios are shown below (Refer to Table 8). The estimated regression equation is written as:

$$\text{Ln (odds linkage)} = -0.779 + 1.919\text{FEXP} + 0.631\text{TWORK} + 1.477\text{PROE} + 0.392\text{EST} + 0.03\text{TRAIN} + 0.292\text{CRED}$$

Table 8: Results of Logistic Regression Model

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)
Future expansion(1)	1.919	.499	14.783	1	0.00**	6.816
Total workers	.631	.296	4.531	1	0.03*	1.879
Profit(1)	1.477	.599	6.074	1	0.01*	4.378
Establishment(1)	.392	.455	.741	1	0.39	1.480
Training(1)	.030	.633	.002	1	0.96	1.030
Credit facilities (1)	.292	1.150	.064	1	0.80	1.339
Constant	-.779	.671	1.348	1	0.25	.459

$P < 0.05^*$, $P < 0.01^{**}$

The findings revealed that FEXP, TWOR, PROE are significant in explaining the probability of presence of linkages, while the rest of the variables EST, TRAIN, CRED are insignificant. The predictor variable future expansion is found to be having positive effect on the backward linkage, as shown by the positive coefficient (B= 1.919); the effect size is also very large as shown by the odds ratio (6.816), implying informal units which have future expansion plans are 6.816 more likely to establish backward linkage with the formal sector. The variable profitability also is found to have a positive effect on backward linkage as indicated by positive coefficient (B=1.477). The odds ratio of 4.378 indicates that IWAMEs which showed higher profitability are 4.378 times more likely to establish backward linkage than the IWAMEs with low profit. The estimated results show a positive relationship between total hired workers and backward linkages. The odds ratio of 1.879 indicates that IWAMEs with more hired workers are 1.879 more likely to establish backward linkages than those units with fewer hired workers. This finding corroborates with our first hypothesis and we accept the hypothesis that larger informal enterprises are more likely to have linkages with the formal sector.

3. Results of Log-Lin Model

While examining the quality of linkages, we focus our attention into two aspects: whether the main supplier or the main client of the IWAMEs is in the formal or informal sector. A similar methodology has been adopted to explore the linkages between informal and formal units in urban Cameroon (Kumase, 2018).

With the assumptions and regression equation stated in Section II, Refer to Table 9 for the regression results of our model. Here, we have run two separate regressions: Model 1, where main client is in the formal sector and Model 2, where main client is in the informal sector.

Table 9: Estimation of IWAME Sales

Variables	Log monthly sales					
	Model 1			Model 2		
	Main client = Formal sector			Main client = Informal sector		
	Coefficient	Std.error	VIF	Coefficient	Std.error	VIF
Cluster	0.082*	.046	1.036	.026	.025	1.015
Gender	0.152***	.051	1.160	0.112***	.026	1.133
Establishment	0.219***	.058	1.316	0.096***	.027	1.189
Years of experience	0.229***	.052	1.297	0.200***	.029	1.171
Main supplier						
(Formal=1, Informal=0)	-0.002	.045	1.039	0.074***	.025	1.073
Intercept	3.795***	.063		3.811***	.026	
No. of observations	162			338		
R squared	.386			.337		
Adjusted R squared	.366			.327		
F statistic	19.578			33.685		
Prob (F-statistic)	0.000***			0.000***		
Durbin- Watson	2.097			2.029		

*** Statistically significant at 1 per cent confidence level

The results show that in both Model 1 and 2, the log of monthly sales is positively and significantly related to gender, type of establishment and years of experience. However, our main variable of interest is 'Main supplier. The findings showed that when our main supplier is in the formal sector, then on an average there is increase in sales only when the main client is in the informal sector, as shown by the significant positive effect. This suggests that linkages are beneficial when the main supplier is in formal sector and main client in informal sector (Model 2). However, in case of Model 1, when the main supplier is in the formal sector, we get a negative coefficient (although insignificant) indicating that with formal sector as the main client, the IWAMEs are not able to increase their sales which leads us to intuitively argue that its more beneficial for them to engage with the informal sector. Moreover, our findings haven't supported our hypothesis, because although linkages with the formal sector have been found exploitative, given our sample, we didn't get a significant outcome.

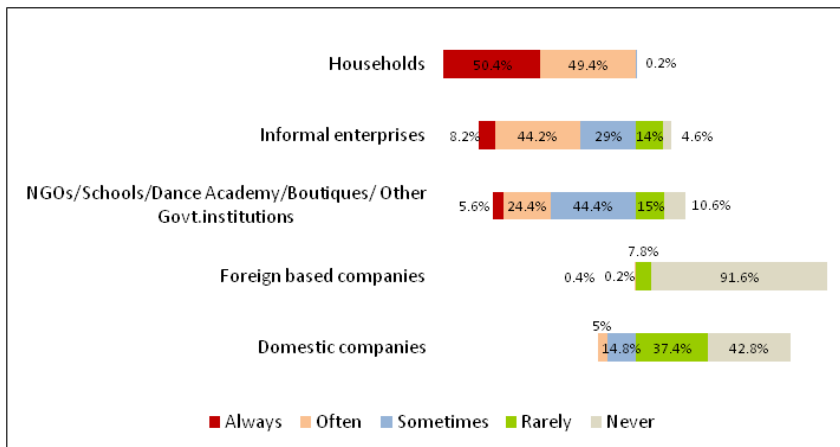
4. Sources of Orders

One of the fundamental questions asked during our survey was regarding the different sources these enterprises get their orders from to get an understanding into the kind of formal and informal units they are linked with. The entrepreneurs' responses are ranked on a 5-point likert scale from 'Always' to 'Never. We draw our results from both the informal enterprises and formal enterprises (Please see Figure 2 and 3). In case

of informal enterprises, five major sources have been identified: Domestic companies, foreign based companies, other wearing apparel informal enterprises and consumer linkages³, which we have sub-categorized into households and NGOs/ schools/ dance academy/other Govt. Institutions. Two clear observations are apparent from the empirical evidence: Firstly, the inter-connectedness of these informal enterprises among each other and secondly, the disconnectedness with the domestic and foreign based companies.

Figure 1 shows how linkages with consumers and informal enterprises are depicted to the left side of the centreline (indicating positive outcome) and that of companies (domestic and foreign) are placed to the right (negative outcome). Around 50.4 % of enterprises are receiving orders from households at all times⁴; more than 50 % enterprises are regularly receiving orders from other informal enterprises (This aspect of linkages are quite common where the informal enterprises exchange orders in times of overwork period such as during festivities). Moreover, linkages with NGOs and other private/public institutions indicate that around 24.4 % and 5.6 % of enterprises receive orders from them quite often and at all times respectively. Looking closely to the right side of the figure, orders from the domestic companies are quite negligible (43 % enterprises have never received orders). That also holds true for orders from foreign companies as linkages with them is non-existent.

Figure 2: Source of Orders for Informal Enterprises



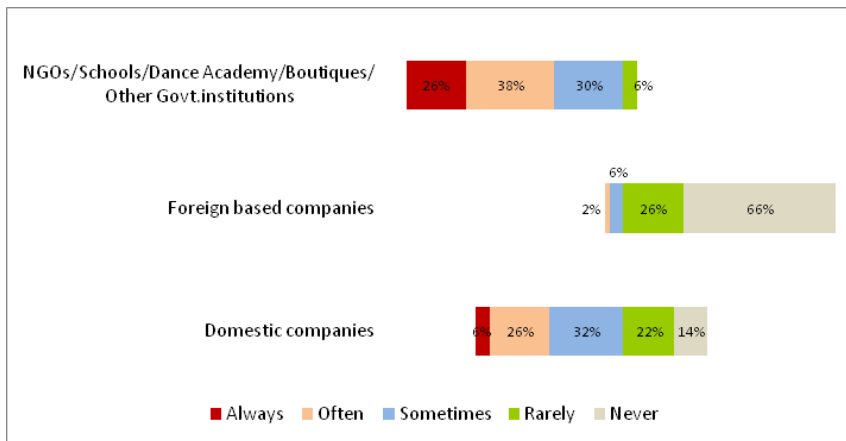
Source: Field survey data

³ See, (Kumase, 2018), for more information on the category of linkages outlined.

⁴ Such observations have been supported by studies [See: (Bohme & Thiele, 2012)] where households constitute an important recipient for informal sector's output.

For comparison purpose, we have attempted to identify the sources of orders for formal enterprises (for three categories) as shown below (Please see Figure 3). The observations show how linkages with the NGOs (along with private/public institutions) and domestic companies aligned more to the left side of the centreline indicating majority of these enterprises catered to these sources (around 26 % and 6 % regularly receive orders from the former and latter respectively). However, orders from foreign based companies didn't see much of an improvement (only 2 % reported to have received orders regularly).

Figure 3: Source of Orders for Formal Enterprises



Source: Field survey data

Additionally, we conducted Mann-Whitney test to compare the informal and formal units in terms of differences in the source of orders (Refer to Table 10). The non-parametric test is conducted since the non-normality assumption is violated due to skewness of the ordinal data (Siegel, 2012).

Table 10: Differences in the Source of Orders

Statements	Mean Ranks			
	Informal	Formal	Mann- Whitney	Significance
	(n=500)	(n=50)	U	(two-tailed)
How often do you receive orders from outside sources?				
Domestic companies	262.55	405.04	6023.00*	0.00
Foreign based companies	268.99	340.62	9244.00*	0.00
NGOs/Schools/Dance Academy				
Boutiques/Other Govt. institutions	264.53	385.17	7016.00*	0.00

* $p < 0.05$

The higher mean ranks of the formal enterprises implies that this group can be considered as getting the highest orders from the three categories as compared to the informal enterprises. It is also concluded that the orders received from domestic companies ($U=6023, p=.00$), foreign based companies ($U=9244, p=.00$), NGOs/schools/dance academy/boutiques/other Govt. Institutions ($U=7016, p=.00$) for the formal units are statistically significantly higher than the informal enterprises.

The main findings reflected from the above analysis suggest that although differences are visible between formal and informal units, their association with the domestic and foreign based companies is low. For the IWAMEs, linkages or subcontracting arrangements mostly happens within the cocoon of households, NGOs and other informal enterprises. Although some enterprises have reported sourcing their orders from outside the country such as that from Bangladesh, most of them cater to the regional orders. The widening gap with the foreign and domestic based companies can be explained from the fact that these enterprises haven't technologically evolved over the years. Their dependence on manual machines, low working capital are added bottlenecks to their production operations. Evidently, this also implies that the activities given out for sub-contracting mostly involve less specialized work such as *dahi bata*, *picou* (forms of sewing design in traditional attire for women), stitching, button work, interlock work, logo making for custom T-shirts and hand-embroidery other than specialized activities like printing, sitaramoti, zari work which are only farmed out to specific units.

IV. Conclusions

The paper tried to explain the different dynamics of linkages between the IWAMEs and the formal units. An overview of the probability of existence of linkages, linkage patterns, and source of subcontracting agreements was elucidated. These issues were analysed because, studies will only be effective when we can have a fruitful analysis on how this sector can be incorporated or linked to the formal sector especially when our economy mostly relies on the labour intensive industries.

The findings revealed that future expansion plans, total workers, increase in profitability are positive and significant in determining the probability of presence of linkages. On the quality of linkage, the linkage pattern has been found beneficial, only when the main supplier and main client is in the formal and informal sector respectively. Additionally, the sources of orders mostly confine within the households and informal enterprises. One of the major conclusions drawn from our findings is the dominance of backward linkages over forward linkages; which indicates that although raw materials are procured from the formal sector, the final products are not being sold to the formal sector. In situations, where the formal sector is the main client, the IWAMEs are not able increase their sales. On that backdrop, the main questions to reflect and ponder upon are: What is the reason behind low forward linkages with the formal sector? Why does the production operations involve less specialised activities? Why do these

enterprises mostly cater to consumer orders? These issues deserve more attention especially when we are examining linkages in North-East India, where despite being situated in close proximity with the major garment hubs of the world, there hasn't been any growth of major apparel clusters.

Our findings call for policies to bridge the pervasive divide between the sectors and tailor them to the advantage of the IWAMEs by blocking existing bottlenecks. Firstly, the technological challenges need to be addressed. The reason for low specialisation is due to their dependence in obsolete machines, mostly operated manually. Thus, incentives need to be provided to improve their level of technology along with investment in machinery and other equipment. Secondly, skilled labour should be prioritised as both technology and human capital investment are interlinked and go hand in hand. Thirdly, the survival of the IWAMEs in the growing competitive environment depends on quality improvement of the finished products. The reason for less prevalence of forward linkages is an indicative of the fact that their products don't have good finishing and can't compete with those from the formal sector. Thus, appropriate measures to create opportune spaces for them to make their products innovative are required. Drawing lessons from other countries, China shows an interesting example of how double digit growth rates were achieved through the growth of the informal sector (Jutting et al, 2008) mainly driven by the dynamic development of small business units, innovativeness in the products and services not supplied by the formal sector and ability to cater to the market demand rapidly (World Bank, 2007). Needless to say, it's important to stress here that the right kind of policies can definitely shed light towards embarking more competitiveness and productivity within the sector.

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