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Breaching the barriers: The segmented business and innovation system of handicraft exports in Cape Town

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ABSTRACT

Twenty years after apartheid was formally abolished, black handicraft exporters in Cape Town still innovate significantly less than their white counterparts. This study explains these differences based on the segmentation of business and innovation systems, a novel approach that aims to contribute to a deeper understanding of path dependency in South Africa. The study concludes that the business system is segmented between formal and informal firms and that such segmentation is correlated with race. Despite path dependency, a group of black entrepreneurs has managed to breach the barriers, owing to the ongoing support of an intermediate organisation, intense networking and risk-taking.

KEYWORDS

Business systems; innovation; segmentation; informality; South Africa

1. Introduction

The economy of South Africa comprises both formal and informal firms (Ligthelm, 2008; Bischoff & Wood, 2013), with the former being owned mainly by white entrepreneurs and the latter mainly by black entrepreneurs (Devey et al., 2006; Herrington et al., 2010). In general, black South Africans face more barriers in starting and running a formal firm than do their white counterparts. These barriers are related to factors such as access to education (Kruss et al., 2010), government support (Ashman & Fine, 2013) and social networks (Adato et al., 2006). The core problem addressed in this article is that these barriers might be path dependent because of the segmentation of the business system. Path dependency means that future development trajectories are influenced by the past and the present (Martin & Sunley, 2006). In particular, differences between black and white entrepreneurs can be traced to apartheid and colonialism (Wilson, 2011; Gradin, 2013). A segmented business system means that formal and informal firms are coordinated and controlled differently by the government, have different firm characteristics and interact differently with other firms and non-firm actors (Wood & Frynas, 2006). The literature appears silent on the segmentation of business systems in South Africa, and an analysis of this concept would contribute to a deeper

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understanding of path dependency and racial determination of the formal and informal sectors.

This article aims, first, to study the path dependency of the formal and informal sectors and whether such segmentation is still determined by race. Second, it examines whether and how black entrepreneurs might be able to set up and run formal firms despite strong path dependency. The article conducts a case study of handicraft exporters in Cape Town. This case study is particularly relevant, because these exporters range from innovative formal firms to poverty-driven informal firms. Cape Town is also arguably the global market leader in contemporary African crafts.

Based on a literature review, a model of path dependency is proposed that connects the segmentation of the business system to the segmentation of the innovation system and to innovation outcomes. The segmentation of the business system between a formal sector and an informal sector explains sustained differences in the practices of firms. Various elements of the business system are expected to have a direct impact on innovation practices, and together form an innovation system (Lundvall, 2007). Segmentation of such an innovation system might result in major differences in innovation outcomes between formal and informal firms, which might in turn reinforce the segmentation of the business system. It is difficult and time consuming to change such a path-dependent and segmented business system, but it is not impossible. Such a change is called path creation.

The article is structured as follows. Section 2 describes why and how segmented business systems result in path dependency and how new development paths might be created. Section 3 reviews research methodologies and Section 4 describes the main findings of the research. Section 5 presents a discussion, conclusions and recommendations.

2. Theory

2.1. Business systems

Formal and informal firms generally operate in different segments of a business system (Pedersen & McCormick, 1999; Wood & Frynas, 2006). The 'business system' concept describes distinct forms of economic coordination and control within a territory. These distinct forms are internally coherent, and firms within one business system tend to have comparable business strategies. They also clearly differ from other business systems, resulting in differences in business strategies between these systems.

Business systems comprise three interrelated elements: government coordination and control, firm characteristics, and cooperation (Whitley, 2000). First, the government actively shapes the economy. It sets and enforces rules that govern firm ownership and control, property rights, the financial system, the education and training system, and labour market organisation (Whitley, 1992:13). These rules tend to change slowly. A 'developmental' government develops rules, regulates markets and organises support such as education, training, property rights and labour protection. Firms therefore operate within a relatively secure and supported environment. A weak or disinterested government might fail to create adequate rules, regulation or support for the economy. Firms might be left without well-educated and trained staff, finance or support for business development. Intermediaries, such as business associations, might tailor the support that governments offer. Second, firms are key economic actors, managed by

entrepreneurs. Large firms are expected to have competencies in-house, while smaller firms depend more on cooperation with other actors. Thus the third element of a business system is cooperation between firms and non-firm actors (such as central and local governments, trade unions, business associations and chambers of commerce). Cooperation is enabled by trust among actors in a business system. These three elements co-evolve, resulting in distinct business systems (Whitley, 1992, 2000) that might range from large, state-owned firms operating in relative isolation from other firms to clustered, small firms operating below the radar of the government.

A segmentation of business systems occurs when multiple business systems exist within a single territory. Within each segment, the role of the government and intermediaries is distinct, as are the characteristics of the firms and the forms of cooperation between them. Firms in each segment adapt their practices to their particular segment of the business system, which accounts for major differences in business practices within a country (Witt & Redding, 2013). Business systems can become segmented if the government is weak or has a narrow social base. Colonial boundaries have often led to the segmentation of business systems, within which people have distinctly different social networks (Whitley, 1992).

Segmented business systems have been studied in, among other places, East Africa (Wood & Frynas, 2006), Mozambique (Wood et al., 2011), China and India (Witt & Redding, 2013). It has been argued that business systems in various African countries are segmented between foreign-owned exporters, indigenous 'formal' firms and indigenous 'informal' firms (Pedersen & McCormick, 1999; Wood & Frynas, 2006). Foreign-owned exporters form part of global value chains. Where they operate in enclaves, they tend to function as a separate segment, relatively disconnected from the local economy (Melese & Helmsing, 2010). Indigenous formal firms generally abide by the rules of the country, while indigenous informal firms often operate beyond formal rules. While there might be comprehensive rules, these are not adequately enforced (Pedersen & McCormick, 1999; Wood & Frynas, 2006).

A study of formal–informal segmentation is challenging because informality is heterogeneous and ill-defined. Perry (2007) and Ligthelm (2008) identify two distinct types of informal firms, which are at the opposite ends of a continuum: firms driven by opportunity and firms driven by poverty. Opportunity-driven firms choose to operate below the radar of the government in order to circumvent regulatory burdens and taxes. This segment of the informal economy is often entrepreneurial and closely connected to formal firms. Poverty-driven firms, on the other hand, are established as a survival strategy of poor households. They are generally associated with low incomes, vulnerability, poor labour productivity, limited risk-taking and low levels of innovation (Perry, 2007). Since the segmentation between formal and opportunity-driven informal firms is open to debate, this article equates informal firms to poverty-driven firms.

Informality has been widely studied in South Africa. These studies show that the South African government tends to play an important role in the formal sector: it coordinates, involves intermediaries, provides education and training, and ensures that laws are applied. Formal firms mainly operate within the rules set by the state and benefit from a sophisticated support and financial system (Ashman & Fine, 2013; Bischoff & Wood, 2013). Education and training are generally of a high quality, although the quality of education and training for workers leaves much to be desired (Kruss et al., 2010). In contrast,

informal firms tend to operate below the radar of the government, are informally organised (Bischoff & Wood, 2013) and obtain hardly any support from the financial system (Padayachee, 2013) or from policies aimed at small and medium enterprises (Rogerson, 2003; Devey et al., 2006).

There are also distinct differences in the characteristics of firms and the cooperation among them. Formal firms tend to be owned by white entrepreneurs and informal firms by black entrepreneurs (Devey et al., 2006; Herrington et al., 2010). Formal firms tend to be larger, operate internationally, have a formal departmental structure with transparent reporting lines and are likely to take risks. Entrepreneurs are likely to have a higher level of education and relevant experience. Informal firms tend to be smaller and operate in the local market. Their income levels are considerably lower than those of comparable formal jobs and incomes hover around the poverty line (Ligthelm, 2008; Bargain & Kwenda, 2010; Ashman & Fine, 2013).

The various elements of informality might reinforce each other and create path dependency. For instance, when an informal entrepreneur has a lower level of education than a formal entrepreneur, employs fewer qualified staff, receives less support from government and intermediary organisations, and only networks with other informal firms, it is hard for such an entrepreneur to formalise. In this case, the segments of the business system are coherent. If the segments were less coherent, for instance when the entrepreneur is better educated, breaching the barriers would be easier. Therefore, the more coherent the segments of the business system, the higher the barriers to entering the formal segment.

There are indications that segmentation in South Africa might be decreasing and becoming less determined by race. On the one hand, the formal economy appears to 'informalise', which is defined as increasing non-compliance with legislation (Bischoff & Wood, 2013). On the other, the number of black entrepreneurs in the formal sector has slowly increased (Randall, 1996; Iheduru, 2004; Leibbrandt et al., 2012). Since 2010, more black entrepreneurs have set up formal firms (Herrington et al., 2014). This trend might indicate path creation. Before the discussion on path creation, the next section examines how differences in innovation systems and innovation reinforce path dependency.

2.2. Innovation systems

This article argues that the formal–informal segmentation of the business system involves elements that determine the level of innovation in firms. These coherent elements are referred to as 'innovation systems' (Lundvall, 2007). The formal and informal innovation systems are analysed in the following, based on the role of the government and intermediaries, on firm characteristics and on forms of coordination.

First, the government and intermediary organisations might create an enabling environment for innovative firms. Their core role is to build the competencies of firms and individuals through education, training and support for business development (Lundvall, 2007). The government might also set rules on industrial standards and intellectual property rights. The creation and exchange of knowledge can be advanced through promoting networking among firms, research institutes and other local actors (Asheim & Isaksen, 2002; Lundvall, 2007). A supported innovation system generally enables firms

to innovate faster and with lower transaction costs. Informal firms, however, might not fully benefit from such an innovation system because they are not part of the formal business system and/or cannot meet industrial standards.

Second, firm characteristics influence the ability of formal and informal firms to innovate. This includes the capacity to acquire knowledge from buyers, the government and other actors; to share knowledge within the firm; to transform the firm; and to exploit knowledge in the market (Cohen & Levinthal, 1990; Zahra & George, 2002). Formal firms tend to benefit from having more capable and better-educated staff, who operate in specialised departments. When these firms innovate, they accumulate even more knowledge. For informal, smaller firms, it might be difficult to grasp the importance of new knowledge, as the gap between their knowledge and the available knowledge might be too large to bridge (Zahra & George, 2002). They also tend to have fewer and less-educated staff (Perry, 2007).

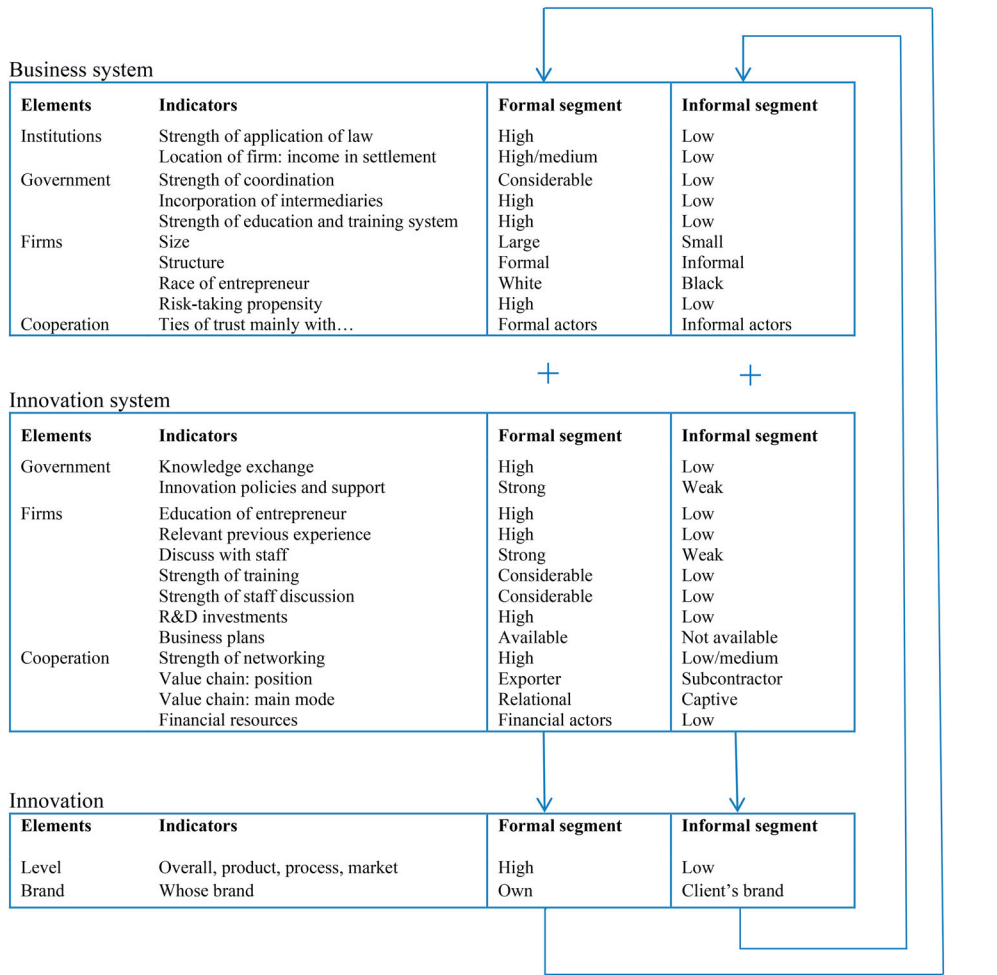
Third, the form of coordination among firms and non-firm actors also influences innovation. In emerging economies, many firms absorb knowledge from 'global value chains', a term that describes all activities required to bring a product or service from conception, through production, to delivery to consumers (Kaplinsky & Morris, 2001:4). Suppliers in emerging economies can acquire knowledge from global buyers, which might not be available locally. However, the ability to acquire knowledge from global buyers is likely to differ between formal and informal firms. Informal firms often do not export; even if they do, their relatively low capacity tends to force them to the bottom of these value chains. Here they are more likely to function as subcontractors (Kaplinsky & Morris, 2001) and depend on transactions with a single buyer. Such an arrangement is called a 'captive' global value chain, as firms are 'captured' by a buyer. They focus on production, while the global buyers control brands, markets and designs (Gereffi et al., 2005). Formal firms are more likely to export and to have more capacity. They might export directly to a global buyer and might subcontract all or part of their production to informal firms (Kaplinsky & Morris, 2001; Perry, 2007). Their capacity, formal networks and government support might enable them to sell to more buyers and build up trusted relationships. Such 'relational' global value chains offer more opportunity for innovation than do captive value chains (Gereffi et al., 2005).

The innovation system therefore tends to differ between formal and informal firms. The innovation system of formal firms, with its support and networks, is likely to result in a higher level of innovation. As formal firms acquire knowledge, train staff and build networks, they build their capacity. In contrast, informal firms acquire less knowledge, training and networks, which makes it harder for them to build capacity.

2.3. Path dependency and creation

A model of path dependency based on coherent business and innovation systems is presented in Table 1. The arrows depict the feedback mechanisms that reinforce path dependency. Coherent segmentation puts formal and informal firms on different development paths (Wood & Frynas, 2006).

The top box of Table 1 illustrates the formal and informal segments of the business system. Segmented business systems can become path dependent and highly resistant to change if segments are coherent (Whitley, 1992). In South Africa, the correlation

Table 1 A model of path dependency.

between race and the segmentation of the business system can be traced to colonialism and apartheid. During that period, the social base of the government was narrow, as it mainly served the white population (Wilson, 2011; Gradin, 2013:187). Black South Africans faced virtually impenetrable barriers in setting up and running formal firms; these barriers were created through laws, local by-laws and segmented social networks (Cornelissen & Horstmeier, 2002; Iheduru, 2004; Wilson, 2011). Towards the end of apartheid, the Business Act (No. 71 of 1991) effectively banned informal traders from inner-city and shopping areas (Wesgro, 2000). These roots of segmentation are still in evidence today. Segmentation is mirrored in the spatial structure of cities (Pieterse, 2010), racially structured social networks (Adato et al., 2006), skewed access to education, persistent differences in the quality of education (Kruss et al., 2010) and a dysfunctional labour market (Gradin, 2013). As people identify with their specific local environment, spatial segmentation continuously reinforces racial segmentation (Cornelissen & Horstmeier, 2002).

The middle box of Table 1 illustrates the segments of the innovation system. These might change faster than those of the business system. A formal firm might, for instance,

employ new staff or start to operate in another global value chain. The segmentation of the innovation system is nevertheless important because it explains differences in innovation, the lowest box of [Table 1](#). Differences in innovation in turn reinforce segmentation in the business system, as firms invest their scarce resources in specific products, technologies and markets. A higher level of innovation also enables a firm to keep learning and adjusting to changing markets and new technologies.

Path creation, the process of changing existing development paths or creating new ones, could conceivably explain the emergence of formal black crafters in Cape Town. Development paths can be created or changed in two ways. The first is through a paradigm shift within laws and/or social networks (Williamson, 1995). South Africa is a good example of such a paradigm shift, as its laws changed significantly when apartheid was abolished. Since the end of apartheid, major policy efforts have aimed at reducing racial segmentation as well as the segmentation of business systems. During the past two decades, South Africa has been acknowledged as a leader in local economic development. Municipalities were given a developmental role to promote pro-poor growth (Nel et al., 2009; Rogerson, 2010), small and medium-sized firms have been supported (Herrington et al., 2010), and black entrepreneurship and employment were promoted through black economic empowerment initiatives (Iheduru, 2004). The impact of these policies has been widely questioned (Rogerson, 2003; Iheduru, 2004; Devey et al., 2006; Padayachee, 2013). In particular, it has been argued that the government's response to the challenge of segmentation was weak and late in coming (Nel et al., 2009; Rogerson, 2010). Despite such criticism, however, it is not unlikely that the current indications of a softening in the formal–informal segmentation of the business system, as discussed in Section 2.1, are a long-term effect of a change in laws. Relatively small but focused support programmes might facilitate a change through continuous support, as shown by Keller & Block (2013) in the United States.

The second way of path creation is through path-breaking innovations (Whitley, 1992). Innovation can steer development paths in new directions, sometimes leading to the transformation of innovation and business systems (Martin & Simmie, 2008). However, most innovations are incremental and hardly affect innovation systems, let alone business systems (Whitley, 2000).

The remainder of this article assesses path dependency based on [Table 1](#), and analyses whether and how a change of laws might have enabled a group of black crafters to start and run formal firms.

3. Method

The analysis uses a mixed-method approach, including a small survey of 83 exporting firms, relatively rich qualitative data and an analysis of secondary data. For the survey, a random sample of 72 formal firms was drawn from a database of 232 exporters. Of these firms, 59 are owned by white entrepreneurs and 13 by black entrepreneurs. The database was compiled using data from the Cape Craft and Design Institute (CCDI), data from trade fairs and an elaborate web search. Because poverty-driven informal firms are not listed in these databases, 11 informal firms were selected through snowball sampling. All informal firms have black entrepreneurs. Qualitative data were collected from semi-structured interviews with 11 firms, nine non-firm actors and three experts. Respondents

were selected from the wider Cape Town city-region, which operates as a single economic space (OECD, 2008).

The segmentation of the business and innovation systems was statistically analysed using the TwoStep cluster analysis of IBM SPSS Statistics 20. The cluster analysis was conducted using all the indicators of the business and innovation systems, and cluster quality proved strong. The internal coherence and external variance of the segments of the business system were assessed using an analysis of variance method. In order to check for counter-arguments, a cluster analysis was run using a smaller number of indicators: captive versus relational global value chains; exporters versus subcontractors; different levels of capacity; and black versus white entrepreneurs. Of all potential clusters, the segmentation between formal and informal firms had the highest internal coherence, external variance and explanatory power.

To analyse whether the segmentation of the business systems was determined by race, a multiple regression analysis was conducted using IBM SPSS Statistics 20. Given the binary nature of the dependent variable, segmentation was estimated using binary logistic regression analysis. Innovation outcomes, as a categorical variable, were estimated using ordered probit regression. The robustness of the models was improved by trimming three outliers. Statistical analyses were controlled for firm and entrepreneurial characteristics and subsector.

4. Findings

The findings of the study are first presented in terms of the path dependency model, through an analysis of the segmentation of the business system and the innovation system, as well as resulting differences in innovation outcomes. This is followed by an analysis of path creation, detailing whether and how black entrepreneurs have been able to set up and run formal firms despite path dependency.

4.1. Segmented business systems

The TwoStep cluster analysis shows that the business system is segmented in accordance with the path dependency model presented in Table 1. Two segments can be identified, which resemble the formal and informal sectors. The segments are path dependent due to significant differences between all indicators of the business system, except for the size of firms (see Table 2). The size of formal firms varies from single-person firms (an artist working alone) to a firm of 170 staff (selling standardised metal sculptures). The size of informal firms ranges from a single-person firm (e.g. a woman producing beaded dolls from home) to a firm with 11 staff (producing designer mirrors, which are ordered by a formal firm in Cape Town).

The formal sector has a number of distinct and coherent characteristics. Formal firms tend to abide by the rules and regulations of the government and to operate from high-income to medium-income areas. About 30% of these firms are located in business districts or around craft markets, shopping malls or The Fringe, a 'design and innovation district' in Cape Town, where they benefit from world-class infrastructure and services. Formal firms do not adhere very strictly to labour regulations, and many labourers work on a casual basis. Trade unionism and collective bargaining are also relatively

Table 2. Cluster analysis of the segmented business system.

		Black	Formal	Total	Informal
Element	Indicator	A	White B	C	D
Institutions	Strength of application of law ^a	Medium	Medium	Medium	Weak
	In informal settlement (%)	0 ^D	0 ^D	0 ^D	60 ^{ABC}
Government	Strength of coordination ^b	2.3 ^{CD*}	1.7 ^{BD*}	1.9 ^{AD*}	1.0 ^{ABC*}
	Incorporation of intermediaries ^b	3.3 ^{CD}	2.2 ^D	2.4 ^{AD}	1.0 ^{0ABC}
	Strength education and training system: % higher educated	69 ^{CD}	93 ^{AD}	89 ^{AD}	36 ^{ABC}
Firms	Size: staff number (mean)	12	15	14	3
	Race entrepreneur: % black	100 ^{BC}	0 ^{AD}	18 ^D	100 ^{BC}
	Structure: departments dummy (%)	8 ^B	56 ^{AD}	46 ^D	9 ^{BC}
	Risk-taking propensity ^b	4.5 ^D	3.8 ^D	3.9 ^D	2.5 ^{ABC}
Coordination	Ties of trust mainly with ...	Many actors	Many actors	Many actors	Buyer
Observations		13	59	72	11

Notes: Variance analysis based on one-way analysis of variance, $\alpha = 0.05$, with a Bonferroni multiple comparison test.

^{ABCD}The indicator differs significantly at $\alpha = 0.05$ with the mentioned column.

*Significant at $\alpha = 0.10$.

^aMeasured qualitatively.

^bMeasured on a Likert scale from 1 to 5.

weakly developed. As a result, the application of laws is seen to be of a 'medium' strength (see Table 2). Formal firms also benefit more from government support than do informal firms. The government has supported handicrafts since 1994, with Cape Town being one of three hubs receiving additional support. These policies blend racial integration with economic objectives (DTI, 2005; Kaiser Associates, 2009). Formal firms coordinate significantly more with the government than do informal firms, especially through intermediaries. With a large number of highly educated entrepreneurs, these firms also benefit more from the education system. About 82% of formal firms are run by white entrepreneurs, and most firms are risk-takers. Larger firms tend to have a departmental structure (see Table 2). Many subcontract production to informal firms, which allows them to be more flexible, produce at a lower cost and/or brand themselves as social entrepreneurs.

In contrast, informal firms tend to operate below the radar of the government. They are generally located in low-income settlements, where infrastructure and services are limited, as are their potential social networks. About 30% of the entrepreneurs are from neighbouring countries, while most of the others are from the Eastern Cape. This implies that their social networks are likely to be relatively weak. Informal firms operate without the benefit of government support, as indicated by a low score on coordination in Table 2. All informal firms in the sample are run by black entrepreneurs and none has a departmental structure. The entrepreneurs are poverty driven (see Table 2).

4.2. Segmented innovation system

The innovation system is similarly segmented between formal and informal firms (see Table 3). Formal firms exchange considerably more knowledge with the government, which is channelled mainly through intermediary actors. The CCDI is seen as the key intermediary actor. It offers sectoral business development services, a laboratory and networking support. The CCDI is located in The Fringe, close to many formal firms, and

Table 3. Cluster analysis of the segmented innovation system.

Element	Indicator	Black A	Formal White B	Total C	Informal D
Government	Knowledge exchange with CCDI ^a	3.3 ^{BD}	2.2 ^{AD}	2.4 ^D	1.0 ^{ABC}
	Knowledge exchange with all non-firm actors ^a	2.3 ^{BD*}	1.7 ^{AD*}	1.9 ^D	1.0 ^{ABC*}
Firm	Innovation policies and support	Yes	Yes	Yes	No
	Education entrepreneur: primary (%)	23 ^{BD*}	3 ^{AD*}	7 ^D	55 ^{ABC*}
	Education: art/design (%)	67	64	65 ^D	0 ^C
	Relevant previous experience (%)	24	51 ^D	45 ^D	9 ^{BC}
	Discuss with staff ^b (%)	31 ^B	66 ^{AD}	59 ^D	9 ^{BC}
	Staff training (%)	46 ^{D*}	43 ^D	37 ^D	0 ^{ABC}
	Training entrepreneur	92 ^{BCD}	58 ^{AD}	62 ^{AD}	9 ^{ABC}
	Business plans (% firms)	54 ^D	50 ^D	51 ^D	0 ^{ABC}
	R&D investments (% firms)	69	93 ^D	87 ^D	45 ^{BC}
	Strength of networking ^a	4.2 ^{BCD}	3.4 ^{AD}	3.5 ^{AD}	2.2 ^{AB}
Coordination	Value chain: % subcontractor	0 ^D	1 ^D	1 ^D	91 ^{ABC}
	Value chain: % captive	0 ^D	2 ^D	2 ^D	91 ^{ABC}
	Finances: borrowing (% firms)	8	24	20	9
Observations		13	59	72	11

Notes: Variance analysis based on one-way analysis of variance, $\alpha = 0.05$, with a Bonferroni multiple comparison test.

CCDI = Cape Craft and Design Institute, R&D = research and development.

^{ABCD} The indicator differs significantly at $\alpha = 0.05$ with the mentioned column.

*Significant at $\alpha = 0.10$.

^aMeasured on a Likert scale from 1 to 5.

offers applied sectoral knowledge. Another institution, Design Indaba, organises trade fairs, exhibitions and conferences. The Cape Peninsula University of Technology proactively supports both the CCDI and Design Indaba, educates designers and collaborates with government programmes. The Department of Trade and Industry designs and implements policies and offers subsidies for entrepreneurs to attend trade fairs.

The capacity of formal firms to innovate is significantly higher than that of informal firms, because their entrepreneurs have a higher level of education, often in arts and design, as well as more relevant experience. They conduct more discussions with staff, attend more training, undertake more business planning and invest more in research and development (see Table 3). Formal firms also coordinate differently in global value chains. As exporters, they are more likely to operate in relational global value chains. Their role in these chains is primarily that of pioneers or adapters of contemporary African design to global markets. In this innovative market niche, Cape Town's formal firms are world leaders.

Table 4. Cluster analysis of innovation outcomes.

Element	Indicator	Black A	Formal White B	Total C	Informal D
Level ^a	Perceived innovation level	4.1 ^D	4.2 ^D	4.2 ^D	3.3 ^{ABC}
	Process innovation ^a	2.2	1.9	1.9	1.6
	Product innovation ^b	3.0 ^D	3.2 ^D	3.2 ^D	2.2 ^{ABC}
	Market innovation ^a	2.6	3.6 ^D	3.5 ^D	1.6 ^{BC}
Brand	Own brand (at times) (%)	93 ^D	98 ^D	97 ^D	9 ^{ABC}
Observations		13	59	72	11

Notes: Variance analysis based on one-way analysis of variance, $\alpha = 0.05$, with a Bonferroni multiple comparison test.

^{ABCD} The indicator differs significantly at $\alpha = 0.05$ with the mentioned column.

^aMeasured on a Likert scale from 1 to 5.

^bMeasured on a scale from 1 to 4.

The informal sector is significantly different (see Table 3). Informal firms do not exchange knowledge with the government or intermediaries and have far less capacity than do formal firms. Furthermore, all of the informal firms in the sample are subcontractors and operate mainly in captive global value chains. They are highly dependent on knowledge, materials and tools from the firms that subcontracted the production to them. As Respondent #16, who subcontracts work to poverty-driven firms, explains:

They [informal firms] are not exposed to magazines. They make designs out of their head based on what they see, such as billboards. We inspire them by giving them designs from magazines.

Poverty-driven firms mainly imitate the product designs of the contracting firm or adapt these slightly, if required. As subcontractors of Respondent #16 explain:

We always make what [Respondent #16] tells us to make. She gives us pictures and explains what we have to make. Also the colours and the designs. She gives us the beads and other material that we need. (Respondents #35 to #37)

Informal firms can potentially learn from the contracting firms how to produce according to international standards, but they are constrained by their limited capacity and a lack of support from the government and intermediaries. These entrepreneurs are also less inclined to take the risks associated with innovation.

4.3. Innovation outcomes

As expected, the different segments of the innovation system have different innovation outcomes (see Table 4). Formal firms perceive themselves as significantly more innovative and they are more likely to have their own brand. Their artistic, contemporary designs enable them to sell at high prices. Formal firms also open up new market opportunities; for instance by exhibiting at the launch of an upmarket vehicle (Respondent #9). In contrast, informal firms tend to imitate the designs of the contracting firm, sell only to this firm and charge low prices.

A regression analysis reveals that differences in innovation outcomes are explained by the segmentation of the innovation system (see Table 5). In general, formal firms, especially those focusing on arts and design, are more innovative. Better-educated entrepreneurs are also more likely to be innovative than less-educated ones. Innovation reinforces segmentation, because it enables firms to learn and improve performance.

Table 5. Predictors of the innovation level.

	Minimum	Maximum	Mean	Standard deviation	Regression on innovation level
Innovation level	1	5	3.0	0.841	
Black poverty-driven firms	0	1	0.13	0.341	−1.164** (0.515)
Artistic products	0	1	0.17	0.377	1.248*** (0.394)
Education level: primary	0	1	0.13	0.341	−0.847* (0.483)
Observations					83
Adjusted R ² (Nagelkerke)					0.321

Note: Robust standard errors in parentheses.

*p < 0.1.

**p < 0.05.

***p < 0.01.

Formal firms acquire significantly more knowledge, attend more training courses and develop more networks. As a result, they learn faster.

A robustness analysis is used to show which elements of the innovation system best predict the level of innovation. On the whole, firms that operate in relational global value chains, export their products and exchange knowledge with local buyers are more likely to be innovative. In this sample, all of these firms are formal. In contrast, firms that operate in captive global value chains, function as subcontractors and exchange little knowledge with local buyers are less innovative. All of these firms are informal in this sample. This shows that the characteristics of the value chain within which firms operate predict both innovation and segmentation of the business system. Therefore, value chains reinforce the segmentation of business and innovation systems.

4.4. Breaching the barriers

While the findings of Sections 4.1 to 4.3 suggest path dependency, the issue is more complex. Regression analysis reveals that the likelihood of a firm being informal is no longer determined by the race of the entrepreneur, given that a group of black entrepreneurs now run formal firms, as discussed in the following. Instead, the key determinant is whether the firm operates as a subcontractor (see Table 6).

Thirteen black entrepreneurs have joined the formal sector. By and large, their firms are similar to those of their white counterparts. The entrepreneurs operate in similar legal environments and social networks (see Table 2), the firms have similar capacity (see Table 3) and they innovate in similar ways (see Table 4). The crucial differences between black-owned and white-owned firms are in the specific role played by the government, in other characteristics of the firms and in the forms of coordination between firms.

First, black entrepreneurs are significantly closer to the government and intermediary actors than are white entrepreneurs (see Table 2). They have received considerable training, advice and financial support over a long period (see Table 3). A majority (54%) have prepared business plans with support from the CCDI, which proactively visits firms, coaches entrepreneurs, sources new buyers, markets products and invites firms to networking events and trade fairs. In contrast, white entrepreneurs perceive the CCDI as 'far behind' (Respondents #17 & #74) and its training as 'irrelevant' (Respondent #16).

Second, black entrepreneurs have, on average, a lower level of education and experience. They communicate less with their staff and their firms are less likely to have a departmental structure. They compensate for these weaknesses in part by their high propensity for taking risks (see Table 3). Business development support from the CCDI also enables them to overcome the firm-level weaknesses. Black entrepreneurs appear to take different routes to formality, depending on their level of education. Those with only a primary

Table 6. Predictor of segmentation.

	Minimum	Maximum	Mean	Standard deviation	Regression on segmentation
Subcontractor	0	1	0.14	0.345	6.538*** (1.454)
Observations					81
Adjusted R ² (Nagelkerke)					0.805

Note: Robust standard errors in parentheses.

***p < 0.01.

education generally start producing and selling products on the street (Respondents #3, #26 & #76). They need extensive and sustained support from the CCDI to establish formal firms. These firms mainly operate from home, but some entrepreneurs open shops in upmarket areas in order to attract tourists and create trust among global buyers. In contrast, entrepreneurs with university degrees generally create formal firms from the start and require less support from the CCDI, albeit still more than do white entrepreneurs (Respondents #8, #11, #32 & #54).

Third, black entrepreneurs coordinate significantly more with other firms and non-firm actors, such as global buyers (see Table 3). In contrast, white entrepreneurs primarily network with local formal firms. Respondent #58, located in one of the business districts, describes knowledge exchange among formal firms:

We share the floor of this building ... with three firms. ... We especially collaborate in marketing. Interior designers approach us as a team. We always help each other. We talk about new ideas. We bounce ideas. We use the same suppliers, inform each other.

Knowledge flows quickly within these social networks. The CCDI and other local actors organise regular events, such as a design platform, meetings and a design week, to help firms share knowledge. Knowledge exchange is also facilitated by the geographical clustering of firms in and around The Fringe and shopping malls.

In summary, the main factors that enable black entrepreneurs to breach the barriers to the formal sector include extensive support (especially from the CCDI), intensive knowledge exchange, a high propensity for taking risk, frequent trade events and the clustering of firms.

5. Discussion and conclusions

This article discusses the segmentation of business systems in South Africa. The findings are limited to an illustrative case study of handicraft exports in Cape Town. The article proposes a model of path dependency (see Table 1, Section 2.1) to explain resistance to change. The model includes the segmentation of business and innovation systems, as well as innovation outcomes. The segmentation of the business system is persistent if the segments are cohesive and distinct. In contrast, the segmentation of the innovation system can change more quickly. However, it might result in different innovation outcomes, which might in turn reinforce the segmentation. While many studies assess the path dependency of innovation from the perspective of innovation systems, this 'deeper' institutional perspective, as recommended by Whitley (2000), enables a longer, evolutionary perspective. This analytical approach appears to be new to South Africa.

The findings show that the business and innovation systems are significantly segmented between formal and informal firms. However, segmentation is no longer determined by race. Instead, in this case study segmentation is explained by the position of a firm in the global value chain, with informal firms largely operating as subcontractors. Global value chains also explain differences in innovation outcomes among firms. It can therefore be concluded that global value chains play an important role in reinforcing the segmentation of business and innovation systems among handicraft exporters in Cape Town. However, the segmentation is closely correlated with race. The segments are very coherent: most informal firms are subcontractors owned by black and less-educated entrepreneurs, while most formal firms are exporters owned by white and educated entrepreneurs. Black

entrepreneurs still face barriers in setting up and running formal firms related to the application of laws, education level, previous experience, risk-taking propensity, structure of the firm, location of the firm and social networks.

Segmentation can be traced to colonialism and apartheid. The laws and social networks change slowly and are still mirrored in the spatial structure of Cape Town (Pieterse, 2010), racially structured social networks (Adato et al., 2006), skewed access to education, persistent differences in the quality of education (Kruss et al., 2010) and a dysfunctional labour market (Gradin, 2013). Segmentation is reinforced by differences in innovation outcomes: formal firms innovate and strengthen their competencies, while informal firms seldom do so. It can therefore be concluded that racial differences between formal and informal firms stem from differences in laws and social practices and are reinforced by global value chains and innovation outcomes.

Despite strong path dependency, a small group of black entrepreneurs has been able to set up and run formal firms. As Whitley (1992) and Williamson (1995) argue, a paradigm shift in laws and social practices can trigger path creation. The abolition of apartheid and the formation of new regulations are good examples of paradigm shifts. Intermediary organisations and events have been instrumental in translating these new rules into concrete sectoral support programmes. The CCDI in particular offers extensive support in setting up and running formal firms and in acquiring relevant and up-to-date local and global knowledge. This support is continuous, because black formal firms still face barriers created by relatively low education levels, limited experience, a relatively weak departmental structure and poor communication within firms. Other factors allowing black entrepreneurs to breach the barriers include the clustering of firms, intense networking and a strong propensity for taking risk.

Two recommendations flow from this discussion. First, further research is needed on the segmentation of business and innovation systems in South Africa. It is especially important to understand the role of support organisations, such as the CCDI, in enabling black entrepreneurs to enter the formal sector. It is also not clear whether the finding that formal–informal segmentation is no longer determined by race would be valid in other industrial sectors. Handicrafts have relatively low barriers of formality, which might be relatively easy to breach. Formal black entrepreneurs have also obtained government support. It is hoped that this case study could illustrate the relevance and methodology of such analyses.

Second, policy support for black, risk-taking entrepreneurs should be continued and preferably increased. Such support should be tailored to the particular segment of the business and innovation systems. Sector-specific, intermediate organisations such as the CCDI might be best placed to offer tailored support for business development. These services should include support for setting up and running businesses and should facilitate knowledge transfer, for example through trade events, meetings and training courses. These events might best be organised around clusters of firms.

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